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THE  
PRACTICAL MEDICINE SERIES  
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YEAR BOOKS

COMPRISING TEN VOLUMES ON THE YEAR'S  
PROGRESS IN MEDICINE AND SURGERY

ISSUED MONTHLY

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UNDER THE GENERAL EDITORIAL CHARGE OF

GUSTAVUS P. HEAD, M. D.

PROFESSOR OF LARYNGOLOGY AND RHINOLOGY, CHICAGO POST-GRADU-  
ATE MEDICAL SCHOOL

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VOLUME VII

PEDIATRICS

EDITED BY

ISAAC A. ABT, M. D.

ASSISTANT PROFESSOR OF MEDICINE (PEDIATRICS DEPARTMENT) RUSH  
MEDICAL COLLEGE

---

ORTHOPEDIC SURGERY

EDITED BY

JOHN RIDLON, A. M., M. D.

PROFESSOR OF ORTHOPEDIC SURGERY, NORTHWESTERN UNIVERSITY  
MEDICAL SCHOOL

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**BY**

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# PEDIATRICS

BY

ISAAC A. ABT



## INTRODUCTION.

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A complete abstract of all the pediatric literature of the year would be impossible in the space allotted to this department, nor would it be desirable to abstract all of it, some of it dealing with speculative problems concerning the infant's metabolism, and having as yet merely a theoretic importance. It has been the endeavor of the Editor to make a judicious selection of the literature, and to bring out what seemed to him the important work of the year which has a value from the standpoint of bedside medicine. The diligent investigations which have been carried on in the domain of infectious diseases have been carefully considered, with particular reference to scarlet fever and diphtheria. The serum therapy of scarlet fever, which has been announced during the past year, is still in its experimental stage, and judgment on its value must be reserved until more clinical tests of its efficacy have been made.

The advances in infant feeding have been recorded. The whole subject of infantile dietetics is still controversial; it may be said, however, to the credit of American students of pediatrics, that a system of infant feeding has been evolved which presents many points of advantage and deserves the careful consideration of physicians here and abroad. The method of substitute feeding, if properly understood, enables the physician to so vary the ingredients of cow's milk as to meet almost every condition of the infant's digestion.

Many reports on the treatment of the gastrointestinal diseases have been included in this volume, and the opinion of all the writers of the year tends to emphasize the importance of securing pure milk for feeding, and, in general, to lay greater stress upon prophylaxis—less on the drug treatment of this class of disorders.

Additional light has been thrown upon the subject of

typhoid fever, particularly in young children. The point has been brought out during the last year that typhoid fever of infants under two years of age is not as rare as has been previously supposed.

In preparing this little volume, the Editor has followed the plan of selecting such material from the year's literature as was of special interest in the pathology and treatment of the diseases of childhood. Those diseases which occur commonly in adults and children, and present no peculiar features in the latter, have not been considered for the most part.

## PEDIATRICS.

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### DISEASES OF THE NEW BORN.

**Statistics.** C. Porak and G. Durante<sup>1</sup> have collected statistics from 2,228 weak infants treated in the past four years in Paris. Of these, 1,547 died, a total mortality of 69 per cent. One-third entered in a moribund condition; another third died in one week after admission, leaving a mortality of 44 per cent. Infection is the most common cause of death, especially septicemia. The low temperature of these infants is raised by incubators, baths, cotton, hot water bottles, etc. The lack of cellular development in these babies explains their lack of resistance to infection. Necropsy followed death in every case. Many suggestions are made for improving the treatment of new-born weak infants in Paris.

[In the discussions on infant mortality which appear in the various text books and in the current literature the term congenitally weak babies is extensively used. The congenitally weak babies are few compared to the large number who die as a result of improper feeding, overcrowding and general hygienic neglect.—Ed.]

**Premature Infants.** In discussing the problem of the premature infant, J. W. Ballantyne<sup>2</sup> says the seven-months' fetus of a healthy mother may be viable, while the seven-months' fetus of a syphilitic mother may be non-viable. Anatomically, the premature infant is a fetus bereft of one of his most important organs, namely, his connection with the placenta; thus he also lacks the membranes, the liquor amnii and the vernix caseosa which is carefully removed immediately after birth. Physiologically the infant is partly a fetus and partly a new-born child in that certain extrauterine functions must now be taken up

(1) *Archives de Médecine des Enfants*, November, 1912.

(2) *British Medical Journal*, May 17, 1912.

for which it is less prepared than the child born at full term. Recent investigations go to show that the placenta is not the simple transmitting organ that it has been supposed to be, but that it is possessed of great selective and protective powers which are enhanced during the last three months of intrauterine life.

**Pathology of the Premature Infant.** The premature infant stands midway between the fetus and the new-born child in respect to its pathology. The fetus becomes infected through the umbilical cord, the new-born child through the more usual avenues of entrance—the gastrointestinal tract, lungs and skin. In the premature child the closure of the umbilical vessels is apt to be incomplete and their persistent permeability affords an added route for the transmission of infection, while he is more susceptible to infection through the usual points of entrance. Hence, the increased morbidity and mortality of such infants. Furthermore, the fact that an infant is prematurely born presupposes an ill and gravely weakened parent.

**Management.** The three leading indications in the management of the premature infant are (1) to prolong the most useful and the best features of fetal life after birth; (2) to supply some of the features which cannot be prolonged; (3) to awaken and strengthen the dormant or inefficient functions peculiar to post natal existence. The incubator of improved construction, such as is used in the maternity hospitals of Paris, meets many requirements. With a temperature carefully regulated to a little more than the heat of the child's body and highly moistened air, the child can be kept in the dark and shielded from injury. The only protection against the entrance of germs is to keep the incubator as nearly aseptic as possible. Much is simplified if the mother can provide and the child can suck the milk; otherwise, predigested food must be passed directly into the stomach through a tube, or dropped into the mouth with a dropper. In order to supply a deficiency in iron, the writer has commenced the giving of an easily absorbed and unirritating peptonated iron in a few drops of water between meals. His experience is not sufficient to draw conclusions as to its beneficial effects, but it has done no harm. Feeding should be frequent and in small quantities. These children are usually born in an

asphyxiated state, and as the Schultze swinging movements are unsuitable in such infants, the alternating flexing and extending of the trunk is recommended.

**Asymmetry.** A case of congenital asymmetry or hemihypertrophy in an infant is described by A. Hymanson.<sup>1</sup> The parents were not consanguineous, and there was no history of deformities in their families.

The child was born at full term, July 1, 1901, and weighed  $12\frac{1}{2}$  pounds. The labor was difficult, but no forceps were used. At six months the mother noticed that the limbs on the right differed in size from those on the left. When first seen by the author (on Sept. 5) the child was in excellent physical condition, and weighed 14 pounds. The right forearm was larger in circumference than the left by  $1\frac{1}{4}$  inches, the right arm by  $\frac{5}{8}$  inch, the right leg by  $\frac{5}{8}$  inch, and the right thigh by  $\frac{3}{4}$  inch. The right arm was  $\frac{3}{4}$  inch longer, and the leg  $\frac{7}{8}$  inch longer than the corresponding limbs. The ear, thorax, abdomen, scrotum, testicle and buttock were more developed on the right side. The head was moderately covered with hair, but that on the left was somewhat coarser and less inclined to curl than on the right. The fontanels were open, and there was no craniotabes. The expression was somewhat idiotic, and the child cried a great deal; the reflexes were normal. On Oct. 1 the child had about a dozen convulsions in twenty-four hours, also in January and April, 1902. Their origin could not be ascertained, but they responded quickly to treatment.

April 1, 1903. The child was nursed for one year. He cut the lower incisors at about eighteen months, and has four teeth at present. He can sit up, but cannot stand, and creeps with difficulty. Is stronger on the left normal side, is somewhat rachitic, and the anterior fontanel is wide open. He understands much more and takes interest in his surroundings, but does not speak. Measurements show that the hypertrophied side is growing rapidly, while the left side is somewhat slow.

This condition was described by Von Klein in 1824, and since then some 30 cases have been recorded. It seems to begin in fetal life, whether only one limb or the entire half of the body is attacked. It may be limited to one

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(1) Archives of Pediatrics, June, 1903.

limb, as a finger, or the entire half of the body may be affected; the leg is more often attacked. According to Comby all the tissues in the limb participate—skin, cellular tissue, muscles and bones, and Arnheim found the viscera in his case all enlarged, even the cardiac valves.

There is no satisfactory explanation of the etiology; boys are more often affected. As regards prognosis, the children, except for the deformity, remain in good health, but the deformity is always progressive up to a certain age. When the hypertrophy is limited to one limb it is to be differentiated from elephantiasis, but in the latter the skin is uneven and rough. In partial acromegaly there is no increase in length of the limb. Treatment is futile.

**Weight.** J. Zahorsky<sup>1</sup> places the importance of *weight as a means of prognosis and diagnosis* on the same plane as the body temperature. The increase in weight of the breast-fed baby forms a curve the convexity of which looks upward. The weight curve of the baby fed on cow's milk has its convexity directed downward. The breast-fed infant gains most rapidly in weight during the first four or five months; whereas the bottle-fed baby gains most rapidly during the second six months.

To make this subject one of clinical importance the gain or loss in weight must be compared with the normal increment of a child at that particular age. The baby should be weighed at the same time every day, after a bowel movement if possible, and just before giving food.

Loss in weight would suggest incubation of an infectious disease; insufficient food supply; disturbance of digestion or metabolism. A careful investigation should be made to determine which of these causes is operative and proper treatment instituted.

A gain in weight may be due to edema of the subcutaneous tissues. When an atrophic infant is fed on very dilute food, transudation of serum into the tissues may occur with a consequent increase in weight. The author has observed four such cases within a year. Belladonna, by checking the secretions, causes edema and increase in weight. A discontinuance of the drug will correct the disorder. A change of food may cause a slight temporary loss in weight. A very rapid increase in weight some-

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(1) *Courier de Medecine*, January, 1903.

times occurs just before death; it also occurs when the kidneys are inactive.

If, in spite of all care, the infant continues to lose in weight, and if the digestive disturbance remains unchanged, there is sufficient ground for suspecting either tuberculosis or syphilis.

As a result of a clinical study of his own cases and those of other authors, J. Audebert<sup>1</sup> concludes that babies sometimes *gain in weight just before death*. This has been noticed in pulmonary tuberculosis, syphilis, umbilical and broncho-pulmonary infections, and in debility.

This increase in weight may be physiologic, due to the ingesta, or pathologic, due to hemorrhagic or proliferative lesions of viscera, or to disturbed balance between ingesta and excreta.

**Icterus.** Skormin<sup>2</sup> describes the following forms of icterus in infancy:

1. Benign icterus neonatorum—a resorption icterus. It begins in the second or third day of life, and lasts until about the second week. In this form there are no biliary coloring matters *in solution* in the urine.

2. Septic icterus—occurring as a result of septic infection of the new-born. The site of infection, as a rule, is the navel. The diagnosis is to be made by the concurrence of the symptom complex of sepsis.

3. Winkel's disease. Here there is the coincidence of icterus and cyanosis, with hemoglobinuria. This form (which is often fatal) is looked upon as infective in its origin, the infection starting from the gastrointestinal tract.

4. A severer form of infective icterus—coming from the gastroenteric tract—has been described by Lesage and Demelein.

5. Icterus after hemorrhage. This is a rare form, and is explained by absorption of the hemoglobin from the extravasated blood.

6. Catarrhal icterus. This form is very rare in infancy.

7. Toxic icterus. A few cases have been reported—*a. g.*, after accidental poisoning with carbolic acid and with resorcin.

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(1) *Gazette hebdomadaire de Medecine et de Chirurgie*, Nov. 21, 1902.

(2) *Jahrbuch für Kinderheilkunde*, August, 1902.

8. Icterus caused by acute yellow atrophy of the liver. Very few cases of true acute yellow atrophy have been reported in infants, but the disease does doubtless occur.

9. As a result of hereditary syphilis, there occurs at times a congenital peripylephlebitis—with resulting compressions of the portal vein—and icterus.

10. Icterus may occur as the result of congenital defect or of congenital occlusion of the biliary passages, as in the cases here reported.

A family series of *fatal and dangerous cases of icterus neonatorum*—fourteen cases in one family, with four survivors—is reported by J. A. Arkwright.<sup>1</sup>

These cases occurred in the progeny of a woman, 44 years of age, who gave birth to fifteen children. Ten of them died in early infancy with marked jaundice and convulsions. The surviving cases are subjects of various congenital and acquired maladies.

These cases of dangerous and fatal jaundice have been ascribed to a congenital obliteration of the bile ducts. In the surviving cases the jaundice lasted several months. Other symptoms noted were yawning, indigestion, convulsions, and in one case hemorrhage from the navel. The males and females were equally affected. The author inclines to the belief that these symptoms are due to a hepatitis and descending angiocholitis. Treatment by mercury was beneficial.

**Cirrhosis of Liver.** A case of *congenital hepatic cirrhosis* with obliteration of the bile ducts is narrated by Wollenstein.<sup>2</sup> The patient, a two-months-old infant, presented the following symptoms: General condition poor; skin, orange yellow; spleen extending one-half inch, and the liver two inches, below the free border of the ribs. The liver felt hard. Vomiting was frequent; the stools were white and curdy. Petechiæ appeared over the entire body; the hands and feet were edematous. Death occurred at the age of three months.

At the necropsy, petechiæ were found beneath the pleura, pericardium, kidney capsule, and in the endocardium. All the organs were bile-stained. The liver was enlarged, was coarsely granular and of a leaf-green color. The gall-

(1) Edinburgh Medical Journal, August, 1902.

(2) Archives of Pediatrics, March, 1902.

bladder was small and imperforate at the neck. The cystic duct and the common duct were fibrous cords. The hepatic duct was also impervious.

Microscopic examination of the liver showed a marked increase in the interlobular connective tissue. The interlobular bile capillaries were distended with greenish-brown pigment. Some interlobular ducts were impervious. The cause of this obstruction must have been an inflammatory condition occurring before birth. Poisons may have gone from the mother to the fetus and there set up a mixed cirrhosis and cholangitis. Nothing definite is known of the nature of the poisons.

**Spontaneous Hemorrhage.** In a recent article the Editor<sup>1</sup> has discussed the subject of *spontaneous hemorrhages* in new-born children. These hemorrhages are of two kinds: (1) traumatic or accidental; (2) spontaneous. Thirteen cases are reported, in ten of which hemorrhage developed shortly after birth, two were a few weeks old, and one 5½ months old. Nine died.

A number of recent writers regard infection as an etiologic factor. Bacteriologic findings were not obtained in all of the thirteen cases. In two of the older children there were all the evidences of septic infection. A study of the disease impresses one with the fact that it may be caused by a number of different conditions, and that no one causal factor is responsible for the hemorrhagic diathesis in infants. It is not thought probable that any specific microorganism will ever be discovered as the sole cause, although a number of writers have isolated microorganisms. It should rather be regarded as a symptom of any one of a number of infections; also as an indication that the porosity of the vessel walls is increased, or that the tendency of the blood to clot is diminished. Examinations of the blood have not shown any changes in its chemistry or morphology. Future research in the etiology should be directed to a histologic examination of the minute blood vessels.

The disease is not of frequent occurrence. Clinicians of this country and abroad place it at from 1 in 500 to 1 in 700 births. Family history should be taken into account. In most of the cases the bleeding was a slow oozing.

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(1) Abt, Journal American Medical Association, Jan. 31, 1903.

Hemorrhage from the stomach occurred twice, and the blood was dark; hemorrhage occurred five times from the bowel, and in one the blood was bright red. Hemorrhage from the vagina in two cases was profuse. There was no bleeding from the male genitalia. Most of the cases showed exacerbations of fever, though in one case, which recovered, temperature remained subnormal throughout the course of the disease; in one it was very irregular. Cyanosis occurred in two as a late manifestation. The disease was ushered in by a convulsion in one of the septic cases, and in another convulsions and muscular twitchings were prominent symptoms. The evacuations from the bowel were very offensive in odor before the hemorrhage was developed. The quantity of blood lost was not sufficient to cause death in any of the cases. Children who suffer from spontaneous hemorrhage and recover, do not show a tendency to recurrent bleeding afterward.

The usual internal remedies have no influence on the progress of the disease, and the local treatment is without permanent influence.

In discussing the foregoing paper Jacobi said that he saw many of these cases when puerperal fever was of common occurrence. Since that time he has seen few. He believes that where hemorrhage occurs in these children there is a defect in the vessel walls. The tissues are still largely embryonal and are more fragile. The specific gravity of the blood is less, but it contains less fibrin. Walls had seen one case where malarial intoxication had been a factor in causation. Another case had a diseased liver with obstructive jaundice, the latter being the causal factor. In still another the child vomited considerable blood, and the microscopic examination of this blood showed it to be arranged in masses resembling exactly the blood casts seen in cases of hemorrhagic nephritis; some who saw the specimen thought it was urine from a nephritic. Some of the casts were bifurcated.

Meyer Wiener<sup>1</sup> reports a case of *spontaneous fatal hemorrhage from the conjunctiva*, with death due directly to the hemorrhage itself. Such cases are extremely rare. Only two can be found in the literature, besides the one which the author reports. In some cases hemorrhage fol-

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(1) St. Louis Medical Review, April 25, 1903.

lowed the use of silver nitrate. In the case in hand, hemorrhage from both lids commenced the morning following birth, and in spite of all efforts to stop it, it continued for five days, ending in the baby's death. Two drops of a 2 per cent solution of silver nitrate were instilled into both eyes immediately after confinement. There was a history of syphilis and gonorrhea in the mother, but no history of hemophilia.

The post-mortem findings were negative.

The author is inclined to think that silver was the occasion, but the cause was undoubtedly a predisposition of the child to bleed.

**Melena.** Max Döllner<sup>1</sup> reports a case of melena neonatorum treated by the injection of 10 c.c. of a 2 per cent gelatin solution. After the second injection the vomiting gradually ceased, the stools contained less blood, the child was quieter, the hiccough, which was severe, disappeared, and finally recovery took place.

E. Fuhrmann<sup>2</sup> also reports three cases of melena neonatorum treated with gelatin injection. The first case was given 20 c.c. of a 2 per cent gelatin salt solution five and one-half hours after the appearance of the first hemorrhage, and repeated in four hours; this child succumbed. The other two cases were similarly treated and recovered. The second case was mild, and might have recovered without the injection. The third case showed a sudden change for the better after the injection was made.

The following formula for the solution is recommended:

R. Gelatin alba .....	1	gram
Sodium chlorid chemically pure	0.3	grams
Aqua destillata .....	50	grams

[In connection with the paper on hemorrhage of the newly born (already referred to), the Editor has considered the use of gelatin in the treatment of this class of cases. He is in no wise enthusiastic in regard to its use. As a result of his experience he has formulated the following: Two cases recovered after the use of gelatin, but this may have been a mere coincidence. When gela-

(1) Muenchener medicinische Wochenschrift, May 27, 1902.

(2) Ibid., Sept. 2, 1902.

tin is used either externally or subcutaneously, it is almost needless to say that it must be repeatedly sterilized. Some experimental work was done with sterilized gelatin on three normal children. Each of these showed such marked toxic effects from the injections that it was deemed unwise to continue them. Rabbits were used in turn, and it was found that large doses of 5 per cent sterilized gelatin caused death in these animals. It is believed that the toxic effects of the substance are due to its origin from the bones of dead animals and that cadaveric poisons exist which prolonged heat does not affect. The gelatin of commerce is usually acid in reaction, due to bleaching agents, and when neutralized by alkalis the toxic effects are not diminished. No further proof is needed, however, that gelatin causes more rapid coagulation of the blood than by simply exposing it to air. It is difficult to state what is a safe dose of gelatin to be administered subcutaneously to a new-born infant.—Ed.]

**Hematemesis.** L. E. Holt<sup>1</sup> reports a case of hematemesis which began sixteen hours after birth and recurred at intervals of a few minutes for about eight hours. Hemorrhages into the skin and mucous membranes were noticed. Saccharated suprarenal extract in 1-grain doses was given hourly for six or eight doses, then in half that quantity. In twelve hours the hemorrhages had entirely ceased and did not recur.

Morse, in commenting on Holt's paper, said he had used the suprarenal extract in a hemorrhage resulting from an external injury at birth, without result.

**Miscellaneous.** R. D. Garcin<sup>2</sup> saw a baby in which eight days after delivery hemorrhage occurred suddenly from the umbilicus, and in spite of all efforts to control it, the infant died in a few minutes. Nothing abnormal was observed about the labor, and the cord came off after the usual manner.

The author ascribes the hemorrhage to a detachment of blood-clot over the seat of the artery.

*Congenital goiters*, says J. T. Hewetson,<sup>3</sup> are rare and assume one of the three great types: (1) Adenomatous; (2) parenchymatous; (3) vascular.

(1) Archives of Pediatrics, April, 1902.

(2) Virginia Medical Semi-Monthly.

(3) The British Medical Journal, March 21, 1903.

Heredity plays an important part in the causation. Demme in Switzerland collected 642 cases of goiter, 53 of which were congenital. In 14 of these, both parents suffered from goiter, in 23 the mother alone, and in 16 neither parent. The male child is more susceptible.

Many of these children are born prematurely, or are still-born. Of those surviving birth, a considerable number die soon after, due to pressure of the growth on the trachea, esophagus, vessels or nerves of the neck. The milder forms of goiter tend to disappear spontaneously, or are cured by some form of iodine inunction. The severer forms may call for operative intervention, hitherto attended with little success, though Schimmelbusch has recorded one successful case.

Hewetson's case was the seventh child, all six preceding children being still-born. It was born at the end of the seventh month, cried strongly when born, but died five minutes later. No history of syphilis could be obtained, and there was nothing in the condition of the uterus to account for the premature births. No family history of goiter. Antisyphilitic treatment in last pregnancy only. The macroscopic and microscopic examinations proved the tumor to be an enlarged thyroid the size of a hen's egg.

*Suppuration of the lacrimal sac* in new-born infants, according to Ernst A. Heimann,<sup>1</sup> is to be diagnosed by observing the secretion which can be expressed from the lacrimal sac. The great danger lies in the corneal ulcers which the dacryocystitis often produces. The affection follows a stasis within the sac due to a congenital atresia of the nasal portion of the lacrimal duct. The condition is more common than is usually supposed.

Treatment should be begun by massage of the sac, and if this fails, opening the duct by means of probes should be resorted to.

Joachim<sup>2</sup> calls attention to the frequency with which *otitis media* occurs in early infancy. He makes an appeal for its more frequent recognition. The essential symptoms are restlessness, increased temperature and loss of weight, and involuntary, persistent throwing about of the head. A continual whimpering with occasional loud

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(1) Deutsche medicinische Wochenschrift, Jan. 29, 1903.

(2) New Orleans Medical and Surgical Journal.

cries of pain, often taken for colic, the refusal of food due to pain caused by deglutition, are often present.

The infant often reaches for the ear or cries loudly if the ear is touched. These symptoms should direct attention and investigation to the probable existence of middle ear inflammation. Meningeal symptoms and convulsions are often in the train of acute middle ear disease in infants. Ordinary inflammations occur in the course of the acute exanthemata and broncho-pneumonia.

Two cases of *septic infection* of the new-born are reported, one due to the staphylococcus pyogenes aureus, and the other to the bacillus communis coli.

In the first case, reported by L. E. Holt,<sup>1</sup> the baby had been apparently well until fourteen days old, when a few dark spots were noticed on the extremities. These increased very rapidly, and the third day the lower half of the face, the neck and the entire skin of the extremities and the buttocks were covered with a hemorrhagic eruption. The majority of the spots were  $\frac{1}{4}$  inch in diameter, and irregular in shape. Surrounding each hemorrhagic area was slight redness and marked induration. There was slight bleeding from the umbilicus. On the gums nothing was visible, except in the site of the upper incisor tooth, where there was a hemorrhagic area about  $\frac{1}{2}$  inch long. The child died two days after admission to the hospital. At the autopsy the left lung was found to be the seat of some atelectasis, and a purulent meningitis with abundant exudate at the convexity and at the base of the brain was present. The ventricles were distended with serum and contained flocculi of pus. Cultures from the skin during life, and from the internal organs after death, showed a large growth of the staphylococcus p. aureus. The cultures were made from the spots on the skin, from the blood of the hypogastric artery, from the blood of the heart and liver and from the pus in the brain.

In the second case, of Golareich,<sup>2</sup> the mother was in labor three days. There were evidences of meconium in the amniotic fluid. The child was born asphyxiated, and on the second day developed convulsions which continued at intervals until death. There was some rigidity of the neck.

(1) Medical Record, Jan. 13, 1903.

(2) Jahrbuch für Kinderheilkunde, December, 1902.

The autopsy showed acute purulent meningitis, fibrinous pleuritis, diffuse purulent bronchitis, general icterus, ecchymosis of the pericardium and hyperemia of all the organs. The bacteriologic examination of the pus from the meninges revealed the colon bacillus.

Infection of the fetus can take place through the passage of bacteria directly from the mother to the child, or through the infected amniotic fluid. The bacteria may enter the gastrointestinal tract as the result of efforts at swallowing, or may be aspirated into the lungs, giving rise to purulent bronchitis, pneumonia and pleurisy. In this case the prolonged labor and asphyxia led to the conclusion that the condition was one of aspiration bronchitis, with a secondary meningitis.

C. O. Hawthorne<sup>1</sup> reports a case of *arthritis in a child two weeks old, who was suffering from a purulent ophthalmia*. The right shoulder and wrist were first affected, later the left elbow joint, with extension of the swelling down the radial side of the forearm. There was slight redness and apparently little pain.

Attention is drawn to two varieties of arthritis associated with ophthalmia neonatorum. First, a very acute form, with features suggesting a tendency to suppuration. Second, a milder form accompanied by a great deal of effusion and pain on movement, but little or no surface redness. A feature worthy of notice is the extension of the swelling beyond the limits of the joint cavity, a well-recognized affection in many cases of arthritis of urethral origin. Complete restoration of the joints to normal may be noted. This supports and justifies a favorable prognosis in these cases.

Some remarks on *sclerema neonatorum* are made by E. R. Stillman,<sup>2</sup> who reports a case with necropsy.

Sclerema neonatorum is a rare disease. Uzembezius of Ulm reported the first case nearly two centuries ago. To Underwood of England belongs the credit of first recognizing and describing the disease. This affection presents many features in common with sclerema, but differs in so many respects as to leave little doubt that they are separate and distinct. Parrot established the fact that sclerema neonatorum was a distinct clinical entity.

(1) Lancet, May 31, 1902

(2) Journal American Medical Association, April 25, 1903.

The subjects of this disease are usually found among the premature, weakened, poorly developed infants of the foundling asylums. The symptoms may set in suddenly, or be preceded by a variety of general disturbances. The essential feature of the disease consists in changes in the skin; it becomes swollen, shiny, losing its normal folds, appearing as if under tension very like edema, but harder, firmer, showing little or no evidence of pitting on pressure. It loses its elasticity, suppleness, is cold and greasy to the feel, and is fused to the parts beneath. The color varies from dirty yellowish to a livid blue-black. The author cites a case which proved fatal on the fourth day. The necropsy was practically negative.

## HYGIENE.

**Defective Children.** The *causes of intellectual defects* in children are given by Schmidt-Monard.<sup>1</sup> A large number of defective school children are capable of receiving instruction, though not able to work in classes with normal children. Such children should be placed in separate classes if one would treat them successfully, and the instruction should be adapted to their requirements and capacity for learning. The condition of these children is due not only to mental deficiency, but to physical defects as well. Among the causes for intellectual defects in children may be mentioned the following: There may be (1) an intellectual deficiency at birth, due to hereditary causes; the parents may be morally defective, or may be addicted to alcohol or be insane; (2) acquired psychic defects on account of unfavorable social conditions, as poor food, filth, deficiency of light and air; rickets, anemia and *adenophthalmias* resulting from last named causes, or from acute diseases such as diphtheria, scarlet fever and meningitis; (3) glandular enlargements in the nasopharynx.

The author examined 120 children in the school at Halle. He concludes that such children should receive the attention of the physician, the school authorities, and society in general. Those children who suffer from

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(1) Zeitschrift für Schulgesundheitspflege, 1900.

adenoid vegetations should be operated upon; those children who are simply backward should be taken from the general classes in schools and placed in separate schools for the treatment of such children; and the idiotic children who are incapable of receiving instruction should be placed in institutions provided for their care.

A. Grothe<sup>1</sup> makes a plea for *separate classes for the instruction of backward children*. There should be several classes in which the tasks increase in difficulty, though always adapted to the children. The curriculum should be much less difficult than that of the common schools; the hours of study should be fewer, and not more than 25 children should be placed under the direction of one teacher. Of particular value to these children is the development of manual skill in order to fit them for practical work.

**Infantile Alcoholism.** Infantile alcoholism may, according to J. Roubinovitch,<sup>2</sup> be congenital or acquired.

A state of intoxication during conception is a potent cause of death in utero, premature birth and low resistance of many infants in large cities. Should such children survive, they bear the stamp of degeneracy.

Children of alcoholic parents show stigmata of degeneration, physical as well as psychical. Their mortality is 50 per cent before the age of 3 years in London and other industrial centers. Hysteria, neurasthenia, epilepsy, chorea and tremor manifest themselves in the progeny, while psychic disturbances such as mental debility, imbecility, idiocy with hydro- or microcephalus, hallucinatory delirium, melancholia and mania, do not appear until the third generation.

Demme found only 8 normal children out of 57 in 10 alcoholic families; 25 died the first week, 12 were idiots, 5 were hydrocephalic, 5 epileptics, 2 with dipsomania. Half the children in the house of correction in Switzerland in 1884 were of alcoholic heredity.

The influence of *alcoholic heredity* in diseases of children is pointed out by T. D. Crothers.<sup>3</sup> Two children, a boy aged 5 and a girl aged 8, had been invalids from infancy. Both were pale, delicate, excitable and nervous, and the girl

(1) Zeitschrift für Schulgesundheitspflege xiii, Jahrg. 1900.

(2) Gazette des Hôpitaux, June 14, 1902.

(3) Medical News.

had attacks of religious emotion. The parents had used wine for 20 years.

Another case was of a neurotic child 1 year of age, who could be satisfied with tinctures only. Mother alcoholic.

The author treated a boy of 5 years for a great variety of troubles, until at puberty he became a pronounced dipsomaniac. It was then ascertained that his father was an inebriate.

Children have been observed upon whom alcohol in any form and in small quantities acted as a hypnotic; in these, alcoholic heredity was present. Alcoholic ancestors will transmit to their descendants a defective brain and nerve power, resulting in a great variety of nutritional and other disturbances with low vitality and slow growth.

Sometimes offspring of inebriates exhibit power of brain receptivity and instability amounting to genius, but early give way to some disease or nerve degeneration. Inebriety or insanity are common sequels.

Seventy per cent of alcoholic cases are inherited, according to Crothers.

**The Teeth.** The fact that the deciduous teeth rarely receive any attention is asserted by A. G. Friedrichs<sup>1</sup> to be due to neglect on the part of the majority of medical men.

Absolute cleanliness of the mouth of infants and children should be insisted upon by the family physician, and where they cannot be sent to a specialist, the children should come to him every six months for examination of the teeth. Little points of decay can be arrested by dropping crystals of nitrate of silver into them until the cavity is thoroughly blacked. This treatment faithfully carried out will save the teeth. If such treatment should fail to overcome the lesion, the teeth should be drawn. Cavities between the lower and upper six front teeth can usually be arrested by separating the teeth with a pen-knife.

[This subject is of more than passing interest. Carious teeth are frequently the atria for infection of the lymph nodes of the neck. Tubercular glands may originate in this way.—Ed.]

Dentition is accompanied by no symptoms in some chil-

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(1) New Orleans Medical and Surgical Journal, November, 1902,

dren, and in others by *grave disturbances*, says G. Rouchet.<sup>1</sup> The canines usually cause the most disturbance for the following reasons: The roots of the canines are longer than those of other teeth, and their eruption takes place after that of the lateral incisor and first molar, whereas the other teeth are free at least on one side at the time of eruption. Another reason is an anatomic one. The nerves of the upper teeth are supplied with filaments emerging from the superior maxilla, one of the three large branches of the trigeminus. The anterior and posterior dental branches anastomose, forming the dental plexus. Above the canine there is a plexiform ganglion. The better innervation and the late eruption of the canine render dentition more difficult.

The symptoms are local and general. Local, hemorrhage, stomatitis, engorgement of the gums, apathy and salivation. The general symptoms are more grave: fever, red spots on the face, diarrhea, vomiting—the two latter are grave symptoms. Nervous symptoms: insomnia, local convulsions, movements of eyes, sudden awakening, cutaneous erythema, eczema, impetigo.

Therapy: Warm baths—30°-35° C. (86°-95° F.)—with child in horizontal position. Milk diet.

[This abstract is published to indicate the extreme views which are still held on this subject. It is going too far, and is not in accordance with modern pathologic conceptions, to state that vomiting and cutaneous phenomena are manifestations of dentition.—Ed.]

**Finger Nails.** The *infectious nature of the dirt beneath the finger nails* was investigated by K. Preisich and A. Schutz.<sup>2</sup> Researches were carried out as follows: A portion of the dirt, collected on a sterilized sound from beneath the finger nail, was mixed with a drop of bouillon, spread on a slide and stained, for tubercle bacilli. The remainder was injected into guinea pigs. Fourteen of the 66 cases studied in this way showed the presence of tubercle bacilli in the dirt.

The following important conclusions were drawn:

1. Not enough care is given to the infant's finger nails.
2. Tubercle bacilli were found beneath the nails of

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(1) Journal de Medecine de Bordeaux, Nov. 28, 1902.

(2) Berliner klinische Wochenschrift, No. 20, 1902.

children living in houses not occupied by tubercular persons at the time of the examination. The infection in these cases came probably from persons formerly living there, or was conveyed from without. This fact possibly is an argument in favor of the disinfection of houses after the death or removal of tubercular patients.

3. The tubercle bacilli were found in every case in which a suppurating bone lesion existed in some member of the family.

**Infection from Pet Animals.** It is wise to keep in the minds of guardians of children the possibilities of infection from the animals with which the children play.<sup>1</sup> The cat may be a bearer of diphtheria and scarlet fever. Cats may suffer in *propria persona* from these diseases, or they may carry the infection in their fur. In case of a contagious illness in the family, the cat must not be allowed to enter the sick room. Diphtheria and probably scarlet fever, measles and whooping cough have been carried from house to house by dogs. Dogs may suffer from tuberculosis, so free contact of dogs and children, especially in families of known tubercular disposition, should be avoided. The dog is a host of the adult form of the *cysticercus cellulosæ*. Also there are endless possibilities for dogs having on their noses the ova of various intestinal parasites and many forms of intestinal bacteria. Parrots are often allowed familiarities that may lead to the spread of disease. Parrots and other domesticated birds quite often die of tuberculosis. Parrots suffer from a disease called psittacosis (a specific disease of parrots), which is intensely contagious to human beings.

Greater care should be taken to protect children from the dangers of infections carried by animals. Sick animals should be transferred to the veterinarian's care. Animals in times of epidemic should not be allowed to wander from house to house. Dogs, after having been taken for walks, should be carefully washed before being allowed to associate with children. It would seem advisable to limit the play of children with pet animals more than is the present custom.

**Hardening Children.** Hecker<sup>2</sup> refers to the powers of

(1) Editorial in *Archives of Pediatrics*, September, 1902.

(2) *Muenchener medicinische Wochenschrift*, November, 1902.

resistance which children show to changes in temperature. The hardening process is begun in infants by gradually reducing the temperature of the bath, by cold douches following the warm bath, or by cold sponging. Sleeping in cold rooms with windows open and exercise in the open air during all weather is also recommended. In older children the same methods are employed, especially cold douching, light clothing and uncovered arms and legs. Several authors condemn this method in infants, and even claim that harm may result from it, though most authorities recommend it for older children, some insisting, however, on very gradual and moderate reduction of temperature in the hydrotherapeutic measures.

The author opposes the popular opinion regarding the methods of hardening children, and quotes several cases in which nervousness, anemia, bronchitis, malnutrition and other affections have resulted from it. Among the writer's private patients, a great majority of the mothers who were questioned regarding the value of "hardening" methods expressed themselves as opposed to the popular views. An interesting series of experiments showed conclusively that the ordinary methods of hardening have an unfavorable effect upon children in regard to the tendency to take cold, body growth, nervous symptoms, adenoid growths and diseases in general. The author believes that modified methods should be recommended for older children, while no attempts should be made to harden infants.

**Clothing.** A. C. Cotton<sup>1</sup> calls attention to the fact that *improper clothing* may not only interfere with growth from impairment of function, but may also cause actual deformities by undue pressure upon the plastic tissues in their formative stage. The constriction of the chest may not be solely due to rickets, but may be due to compression. Constriction of the abdomen may favor hernias as well as permanent gastric and intestinal disturbances, deformed liver and atrophy of all the muscular structures of the abdominal cavity. He demonstrates by skiagrams the compressibility of the infant's pelvis, and adds that a diaper of unyielding material pinned firmly around the hips of a young infant will compress the pelvis, reducing its diameter. He believes also that genu valgum may be

(1) Archives of Pediatrics, February, 1903.

caused by the tight diaper. The author advises that absorbent cotton, either loose or in pads, should be retained by a T bandage or a triangle of some flexible material such as cheesecloth, and should be secured to the shirt by safety pins before and behind.

**The Influence of Adenoids on Development.** Wilbert<sup>1</sup> has made a study of school children with the view of determining the percentage of children who have adenoids that are quiescent, and those manifesting symptoms. The anatomy of the nose and gums and the size of the naso-pharynx determine the presence or absence of symptoms in this condition of hyperplasia of the pharyngeal tonsil. A slight hyperplasia in a small naso-pharynx is more likely to produce symptoms than is a palpable hyperplasia in a large naso-pharynx. The author agrees with Champeaux that an adenoid habitus is not always indicative of the presence of adenoids. In some cases exhibiting a decided adenoid habitus no hyperplasia was present, whereas in others with distinctly enlarged lymph patches there was no evidence of a habitus. Out of a total of 375 boys between the ages of 6 and 12 examined by the author, 62 per cent had adenoids. Of this number 33 per cent presented symptoms. His figures show that after the eleventh year there is a drop of 15 per cent in the number of cases. He assumes that this is probably due to an atrophy of the pharyngeal tonsils, which usually occurs at about that age. Five per cent of the cases exhibited nervous disturbances; 27 per cent had aural disease. Chronic otitis media was found in only 1 per cent of the cases. Varying degrees of hyperplasia were found in 77—85 per cent of those boys who either could not or would not learn. Of the total number having adenoids, only 17 per cent exhibited no symptoms; 45 per cent suffered either from mental or physical weakness.

**Physical Culture.** Education should do more than to mentally develop the child, says J. A. Gilbert,<sup>2</sup> though the inadequate facilities provided for gymnastics make the task a difficult one. The advantages of a gymnasium are brought out in a comparison of the lung capacity of children in public and private schools. The latter show

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(1) Deutsche medicinische Wochenschrift, Feb. 5, 1903.

(2) Journal American Medical Association, May 31, 1902.

a far greater development of lung capacity. The writer tested the lung capacity of the school children of New Haven ranging in age from 6 to 17 years, the data being based on 100 children for each age. These children did not have the advantages of a gymnasium. His findings were compared with those of W. G. Anderson, taken from children in the private schools of New York who underwent a daily training in the gymnasium. The children examined by the latter had an average smaller lung development at the age of 6, but the increase in development of these children was so rapid that at the age of 15 the private school boys had an average lung capacity of 205 cubic inches, which was greater than that of the average public school boy of 17. Public school boys averaged but 170.3 cubic inches at 15 years of age. In girls the difference is even more noticeable. The public school girl starts with a larger average capacity, but at the age of 10 the private school girl's capacity is larger. At the age of 15 her average is 155 cubic inches, while that of the public school girl is but 116.3 cubic inches. Thus the average private school girl has 31 inches more capacity at the age of 15 than the public school girl at the age of 17.

Ida Richards Compton<sup>1</sup> thinks it is the fault of parents or guardians that a fourth of children born die before they are 1 year old, one-third before they are 5 years of age, and one-half before they are 8 years of age.

A child's appetites and instincts are warped and distorted by its environments and inherited tendencies. During school-life many of the child's natural mental, moral and physical tendencies are dwarfed and fettered. Especially is this the case with girls, whose development is impeded by barbarous and criminal customs. A child who is inclined to be over-studious should be induced to become interested in some form of systematic exercise, especially outdoor sports, and should be given instruction in a fully equipped gymnasium, which should be as attractive to them as a delightful playground.

Children should be examined by a physician at least twice a year, whereby curvature of the spine and kindred evils could be prevented or permanently cured. Drooping shoulders and sunken chests, if early corrected, would

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(1) Atlanta Journal-Record of Medicine.

prevent indigestion, nervousness, and especially consumption. Physical culture teaches self-control.

## DIETETICS.

**Breast Milk.** The importance of breast milk in prolongation of lactation is pointed out by T. S. Southworth.<sup>1</sup> [The writings of Southworth on this subject have been extensively quoted. Owing to the importance of the subject, they deserve repetition.]

He says if the breast milk is scanty, or appears to disagree with the child, the mother either is out of health, anemic or constipated. She is securing too little fresh air or exercise, she is taking too little fluid food of the right kind, or she is not upon a plain, sensible diet.

*Diet during lactation.* The four fluids upon which the mother should depend throughout lactation, to the practical exclusion of all others, are milk, thin cornmeal gruel, water and cocoa. She should drink a quart or more of milk in the twenty-four hours. The gruel should be made of yellow cornmeal. It may be prepared with or without milk, but always of such a consistency that it may be drunk from a bowl two or three times a day. Water should be taken freely throughout the day, keeping in mind that the nursing mother requires at least 3 quarts of fluid in twenty-four hours. Cocoa, if made by prolonged boiling, is a healthful stimulant to the secretion. The remainder of the diet should consist of nutritious and digestible food. Beer is of little nutritive value and often disturbs the infant. Malt extract should be used only where analysis has shown the milk to be very deficient in fat.

*Constipation and Anemia.* Bland's pill is an excellent form of iron, either alone or guarded by cascara, which is the most suitable laxative for nursing women. Sleep, exercise and fresh air are all of great importance.

*Exercise.* If, with regular hours for nursing, the infant vomits, shows evidence of colic or has disturbed stools, the natural deduction is that the proteid content of the breast milk is too high. To remedy this, nothing is so

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(1) Journal American Medical Association, August 2, 1902.

surely effective as walking in the open air, daily increasing the distance. Such exercise should always fall short of actual fatigue, and where this is caused by even short walks, driving out daily has proved a successful substitute.

*Supplementary artificial feeding.* Experience has shown that this may be given in two ways, either by giving a small amount of suitably modified cow's milk after each scanty nursing, or else by making two or more of the feedings exclusively from the bottle, while the others are supplied by the breast. If three or more bottles have to be given, both breasts should be offered each time the child is nursed, or else the milk may rapidly leave the breasts. It is desirable to prolong even a partial lactation as far as possible through the first year of life, babies so fed being more normal and having less illness than those who are exclusively bottle-fed.

C. W. Townsend<sup>1</sup> presents the following conclusions:

1. The *average composition of human milk*, as shown by 117 analyses, is:

Fat .....	2.91
Sugar .....	7.01
Proteids .....	1.34
Ash .....	0.13
Total solids .....	11.39
Solids not fat.....	8.48

2. There are wide variations from the average in milk from the same individual at different times.

3. There are marked variations in the average composition of milk from different individuals.

4. The average composition of human milk does not vary to any marked extent at different periods of lactation.

5. During the first lactation, the milk, on the average, is weaker in fat and proteids, but stronger in sugar than in subsequent lactations. These differences may or may not be due to age.

*A class of infants which will not thrive on breast milk* is described by Effa V. Davis.<sup>2</sup> These infants are fretful and sleepless after the third or fourth day and do not gain in

(1) Boston Medical and Surgical Journal, April 16, 1903.

(2) Journal American Medical Association, June 20, 1903.

weight. The stools show faulty digestion, become frequent, are of a watery consistency and finally are green and diarrheal in character. Excoriations and irritations about the anus with mild eczematous eruptions are noticed. Vomiting is an occasional symptom. The symptoms continue to increase in severity as long as the child is breast fed, but disappear as soon as it is fed on artificial food.

An analysis of the breast milk does not often solve the problem. The author is inclined to believe that in this class of cases it is *the idiosyncrasy of the child*, not the quantity or quality of the breast milk, which prevents successful breast feeding.

Five cases were reported. These infants presented signs of indigestion in the first week of life, but recovered rapidly on an artificial diet properly prepared.

**Artificial Feeding.** A résumé of the more recent advances in the artificial feeding of infants is given us by A. D. Blackader.<sup>1</sup> The indigestibility of the proteids in cow's milk may be overcome by the addition of water, cereal gruels or whey. The addition of carbohydrates is necessary to conserve nitrogenous metabolism and to enable the infant to gain even with a great reduction in the amount of nitrogenous element ingested. An inability to digest a due percentage of fats is supplementary to the difficulty in the digestion of the proteids. Lessening the fat to 1 or 1.5 per cent in troublesome cases may do good. The fat may be gradually increased as digestion improves.

Milk obtained in the country from healthy, pasture-fed cows, milked in the open fields, certainly is better if not sterilized, but milk obtained in the city from more or less unknown sources, and under unknown conditions, should, in the author's opinion, be Pasteurized, especially in summer weather.

The following practical points may be emphasized: An infant fed at the breast, who suffers persistent indigestion and at the same time fails to gain in weight, should be taken from that breast. If, however, the infant gains in weight, it is better to try to correct the indigestion by treatment both of mother and child. To attempt artificial feeding in such a case only adds to the difficulty.

In commencing artificial feeding, begin with a weak

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(1) Montreal Medical Journal, Vol. XXXI, No. 7.

mixture, and work up by frequent but slight changes to a point of tolerance. By still continuing a gradual but steady increase, never beyond the point of easy digestibility, we can in a few weeks attain to a food sufficiently nutritious in all its ingredients and yet fully digestible and assimilable. It is a serious mistake to begin on a mixture too strong, and work down to the point of tolerance.

The question of how long an infant should be kept on a modified milk diet is an important one. It is generally conceded that by the tenth or twelfth month a child should be able to digest almost pure milk. By this time, however, a mixed dietary is preferred. Milk is very deficient in iron. An infant comes into the world with a high percentage of hemoglobin; this gradually diminishes so long as he is fed on milk alone. Only when a mixed diet is substituted for a pure milk diet does the percentage begin to rise again. Cereals, meat juice and broths are rich in iron. Of the cereals, oatmeal is one of the richest in iron, and, properly cooked, forms a useful addition to the infant's dietary. Shortly after the first twelve months, eggs lightly cooked may be permitted at one of the meals in the day. The great richness of the yolk in fat, lime salts and in the organic compounds of phosphorus and iron, makes it a valuable food for the rapidly developing child. At this period, also, food involving somewhat long mastication, such as biscuits and crusts of bread, becomes necessary to the development of the maxillary bones and muscles.

G. R. Pisek<sup>1</sup> says that *cow's milk cannot be made into human milk* by adjusting the percentages of its ingredients. The proteids of cow's milk are not a simple mixture of casein or caseinogen, and lactalbumin. The proteids of human milk are also mixtures of different proteid bodies, and behave differently than the proteids of cow's milk with reagents.

The curds of cow's milk and human milk differ markedly and this difference cannot be overcome by diluting the milk with water. The curds of milk play an important part in the development of the digestive tract, and for this reason milk of some kind must be the basis of an artificial infant food. The addition of lime water or bicarbonate of soda

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(1) Vermont Medical Journal, April 25, 1903.

to milk retards the action of rennet on the milk, and prevents the formation of curds until some acid, HCl or lactic, has combined with the lime or bicarbonate of soda. Heating the milk not only destroys bacteria but also alters it chemically, so that less dense curds form. Too great a production of proteid will cause the infant to become anemic and rachitic.

Some valuable data concerning feeding in infancy are emphasized by A. Hand Jr.<sup>1</sup> To his way of thinking, the routine points to consider are age, weight at birth and intervening weighings, different foods employed and why changes were made, character of the fecal evacuations, intervals of feeding, and how the child sleeps. After these points are ascertained, an effort must be made to secure a good clean milk. When impossible to obtain such milk, then Pasteurization or sterilization (the latter method preferred) must be practiced during warm months. After this the percentage treatment of the food, for which there are several good working plans, must be carried out. Cane sugar is preferred to sugar of milk.

If it is found that a child is not making a weekly gain after being put on a mixture directed by the best skill, before making a change care should be taken to find if the child is getting what the physician has prescribed. The milk used should be tested for fat contents. The use of barley water as a diluent is advised except when constipation exists, when oatmeal water is to be preferred. Infants under three months need careful handling as regards proteids and fats; at three months, proteids should be at least 1.75 per cent increasing as rapidly as the child's digestion permits. In cases where digestion is feeble, the organs are toned up with a mixture of sodium bicarbonate in compound infusion of gentian before each feeding.

L. Fischer<sup>2</sup> says that *some children will not tolerate cow's milk*. He reports three cases in which milk in any form of dilution produced at once gastrointestinal disturbances. As a substitute for milk in these cases, he suggests Keller's malt soup or almond milk.

S. H. Dessau<sup>3</sup> reviews all the *methods of infant feeding*

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(1) American Medicine, Dec. 20, 1902.

(2) Journal American Medical Association, Aug. 2, 1902.

(3) Medical News, May 31, 1902.

that have been popular for a longer or shorter time. His experience for the past six years shows that the simplest, cheapest and best food for daily use is a fair average quality of cow's milk so diluted with water as to meet the requirements of age and digestive capacity of the child. Top milk seems preferable. A pinch of salt or phosphate of sodium and a heaping teaspoonful of raw cane sugar are added to a quart. This is placed in a double boiler with water in the outer vessel and allowed to remain in the water for ten minutes after the latter commences to boil. His experience has been extensive and quite satisfactory; the food agrees well with most babies. In a few cases where constipation has been present, it has been relieved by the addition of a very small amount of malt extract. The addition of cream proved unsatisfactory.

The author thinks his views may be regarded as somewhat heretical, considering the hold that percentage feeding has taken; but he asserts that when mother's milk cannot be secured, the substitution of a good quality of cow's milk, properly diluted and steamed, if easily digested by the child, is an entirely scientific procedure.

It is interesting to note the *opinions of foreign clinicians on the modified milk question*. H. de Rothschild,<sup>1</sup> for example, contributes an interesting account and gives a brief historic sketch of sterilized and modified milk for children, as a substitute for mother's milk. He reviews the methods of Vigier, Gaertner, Backhaus, Budin and Michel and Gordon. He points out the following disadvantages of modified milk:

1. It encourages artificial feeding as against maternal.
2. Inexperienced physicians are liable to prescribe faulty formulæ, which may lead to disastrous effects on the child.
3. Artificial feeding leads to scorbutus.

Modified milk is used in the United States more than in any other country. In France sterilized milk is used extensively and gives good results. The author claims that 400 cases of scorbutus were observed in the United States and over 100 in Germany and England. Only 23 were published in France. In the majority of these cases artificial feeding, especially on modified milk, is to blame.

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(1) *Le Progres Médical*, Nov. 20, 1902.

*Some phases of infantile feeding* are considered by Edward T. Abrams.<sup>1</sup> Three forms of infant feeding are at present in use, according to Abrams:

1. Canned condensed milk.
2. Patent foods, with or without the addition of milk.
3. The use of only the elements of cow's milk, with or without some form of sterilization.

Percentage feeding is and ought to be the only method of infant feeding. Errors in feeding should be sought in the method of feeding, quantity, etc., or in the character of the food. The prolonged use of condensed milk or any of the patent foods will sooner or later result in the manifestations of rickets, scurvy and malnutrition, and feeble resistance to acute diseases.

In artificial feeding, all indications are met, in growing infants, by increasing the quantity rather than the constituents of the modified milk. The following rules for modifying milk are given:

(1) Curdy bowel movements indicate an excess of proteids.

(2) Sour vomiting indicates too much fat.

(3) Watery stools result from excess of sugar or fat.

(4) Vomiting of curdy masses results from too much proteids.

(5) If child does well in every way, but does not gain in weight, more sugar is required.

(6) Vomiting may indicate too large quantity of food.

During hot days the quantity of food should be diminished. Should summer troubles intervene, the patient should be starved for a day or two, only albumin water being given. Sterilization of milk is unnecessary and undesirable.

*An emergency milk warmer*, for infants and young children, is described by Jacob Sobel.<sup>2</sup>

Sobel devised a warmer to be used by mothers who are ordered to keep their babies in the open air a large share of the time. It is constructed mainly of tin and is divided into two compartments, the upper with a double jacket, the outer with a copper base serving as a receptacle for the milk bottle. It is 11½ inches high, 3 inches at its widest

(1) Medical News, Nov. 29, 1902.

(2) Medical Record, Feb. 7, 1903.

part, and weighs 1 pound. An alcohol lamp slips under the copper base which heats milk in three to four minutes. The milk bottle is placed in the upper compartment, and water is poured around it to the level of the milk. The upper compartment has several perforations at the top to drive off impure air, and the warmer has a firmly riveted handle.

R. C. Reed and A. R. Ward<sup>1</sup> quote Morse, who found streptococci associated with suppurative cellulitis in the feet and legs of cattle and sheep, and with other infectious and cystic diseases of the various domestic animals. The rôle of *streptococci as the cause of mammitis, the most common disease of dairy cows*, and the probable relation of this affection to digestive disorders in infants, are of vital importance to the sanitary dairymen. Pus is always present in the milk of cows suffering from this affection. The infected milk possesses no distinctive features by which the disease may be diagnosed without the aid of the microscope, but in a sample of such milk streptococci adhere to the pus cells. Other characteristics of the milk mark the disease, but they are not so constant; the milk may have a disagreeable salty taste, but this is noted in other forms of udder catarrh; the milk varies in color and has a watery appearance due to the deficiency of fat; the chemic reaction of the milk varies—the streptococci themselves bring about an acid reaction in their vicinity, and if the milk is allowed to stand where the temperature is favorable to the multiplication of organisms, it may give a distinctly acid reaction.

The onset of mammitis is extremely insidious, so that the most conscientious milk dealers are unable to exclude infected milk from the other marketed product.

Physicians are inclined to designate streptococci as unimportant causal factors in infantile digestive disorders.

After repeated inoculation tests, extending over a long period of time, with the milk of a cow suffering from chronic mammitis, the essayists conclude:

1. It is impossible to classify streptococci on account of the lack of reliable differential characters; they are largely designated by the lesions with which they are associated. Many writers refer to them somewhat loosely,

(1) American Medicine, Feb. 14, 1903.

apparently not recognizing the necessity for a more specific nomenclature.

2. The common prevalence of mammitis in the cow, and its insidious onset, make it an important source of streptococci in market milk, and one hard to guard against. Its existence is frequently first brought to notice by the presence of curd-like masses in the strainer after the milk has run through into the wholesome milk, but the ignorance or greed of the dealer may prevent his rejection of the infected lot.

3. That the general consensus of opinion on the part of physicians is that these organisms in market milk are dangerous to public health.

4. Streptococci may persist in the udder after a mild attack of mammitis for some time after the udder has completely healed, and no means have been found of differentiating those associated with the healthy condition from those existing when there is active inflammation in the gland. Furthermore, recent investigations show that streptococci are found more frequently in the healthy udder than has been supposed.

5. Further study of the pathology of mammitis is required to understand how non-septic streptococci may become virulent.

C. Douglas<sup>1</sup> states that the assertion of Koch at the Congress of Tuberculosis, in 1901, that bovine and human tuberculosis are not intertransmissible, *practically does away with the necessity for sterilizing milk.*

The experiments of Orth and Esser (*Berlin. klin. Woch.*, 1902, No. 34) proved that out of nine animals inoculated with human tuberculosis, five showed distinct and typical lesions. According to von Korosy, the number of children fed on cow's milk is three times greater than those fed at the breast in the 4,000 cases of tuberculosis he investigated. Infection from tuberculous animals through a scratch is a third argument.

Milk should therefore be Pasteurized for fully forty minutes at 158° F. No preservative should be used in the milk of young children. Where symptoms point to gastric disturbance, five minims of liquid pepsin just before each meal or alternate bottle should be given. Where symptoms

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(1) Glasgow Medical Journal, May, 1903.

of intestinal derangement exist, the use of antifermentatives, as sodium salicylate,  $\frac{1}{2}$  to 1 grain, *t. i. d.*, or calomel, and peptogenic milk powder, are highly recommended.

It is interesting to note in connection with Reed's article that J. Herzberg<sup>1</sup> has found *streptococci* in the oral cavities of healthy infants and adults. The author examined 10 healthy breast-fed infants. He demonstrated in all of these the presence of streptococci in larger or smaller numbers. In their morphology, arrangement and length of chain formation they displayed slight variations. The author concludes that streptococci are very frequently, in fact almost constantly, present in the oral cavities of nursing infants.

A. B. Marfan<sup>2</sup> says *dyspepsia is neither exclusively gastric nor intestinal*; in nurslings it is almost always gastrointestinal, and the same may be said of the so-called catarrh and inflammation. Furthermore, digestive disorders of nurslings are notable for their gravity and also for the frequency with which nearly all of them affect the general health, particularly nutrition and growth. Marfan divides these digestive disturbances into (1) *functional disorders*, (a) constipation, (b) gastrointestinal dyspepsia; (2) *inflammatory diseases*, (a) simple gastrointestinal catarrh, (b) cholera infantum, (c) follicular or dysinteriform enterocolitis, (d) mixed forms; (3) *chronic functional troubles with inflammatory exacerbations*, chronic *dyspepsia* with intermittent *catarrh*; and (4) *disorders of nutrition* consecutive upon *digestive troubles*, (a) simple atrophy, (b) cachectic atrophy. He says that a water diet is the best treatment for vomiting of gastric origin in the nursling. He also recommends this diet in cases of cholera infantum. He advises that the infant be given almost as large a quantity of water as it has been taking of milk. This diet may be continued for twelve to forty-eight hours, as the case requires, and will cause the fermentations and the putrefactions in the gastrointestinal tract to disappear.

Jager<sup>3</sup> began the *use of buttermilk* in 1901, finding it especially adapted to dyspeptic infants. The buttermilk used by him is prepared from pure cream soured by means

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(1) Deutsche medicinische Wochenschrift.

(2) Revue Mensuelle des Maladies de l'Enfance, November, 1902.

(3) Abstract, Medicine, April, 1903.

of bacteria which produce a lactic acid fermentation. To the buttermilk thus obtained is added some wheat flour and cane sugar, after which it is boiled. It is then placed in sterilized bottles stoppered with cotton and kept in an ice-box until used. At the time of feeding, the bottles are placed in water until their contents are raised to the body temperature. This food is given to all infants unchanged, regardless of age, the only variation being as to the quantity employed. He had his greatest success with it in cases of acute dyspepsia, enteritis, vomiting and diarrhea.

Buttermilk may be prepared from cream or milk, or it may be obtained directly from the creameries. The disadvantages of purchasing it from creameries is that it is regarded as a waste product and is not properly conserved. Buttermilk prepared in a domestic way has substantially the same composition, whether made from milk or cream. The simplest way is to take milk, allow it to stand about twenty-four hours, separate the cream and churn it, in this way removing the fat. It is important that the process should be carried out in a clean manner. A cooked buttermilk is prepared, according to Ballot's method, by adding to a liter of buttermilk a soup-*spoonful* of rice. It is then boiled for about twenty-five minutes, during which it is constantly agitated. Then two or three soup-*spoonfuls* of syrup made from cane sugar are added. The buttermilk should be invariably preserved in glass, and not be brought in contact with metals, which it may corrode. The buttermilk should be cooled slowly, as in this way the coagula have a much finer subdivision.

Buttermilk is easy of digestion and assimilation, and is marvelously supported by the majority of infants affected with chronic gastroenteritis and dyspepsia. There are no complications which follow the use of the food even when it is prolonged. It does not develop rickets. Its easy digestibility is probably due to the excess of acid, the absence of fat, and the fact that the casein is already coagulated and in a state of minute subdivision. Not the least important of its advantages as an infant food is found in the fact that it may be furnished at a price which will place it within the reach of all. Especially would this be

the case if an effort were made to have the large creameries preserve the buttermilk free from contamination.

B. Salge<sup>1</sup> says that buttermilk has been used by Heubner since the spring of 1900. It has been given to 119 infants with 85 successes. It is prepared at the Charité clinic by adding to one liter of buttermilk 15 grains of starch and 60 grains of sugar, heating and stirring, after which the mixture is poured into a sterilized flask, closed with a rubber cap and kept in a cool place.

The *effect of sterilizing milk* upon the infant's assimilation, especially with reference to bone formation, is studied by Cronheim and Müller,<sup>2</sup> who describe experiments undertaken upon two large healthy infants who were free from rachitic symptoms. They were given sterilized milk for a time, then unsterilized raw milk. Fats and proteids were better assimilated when sterilized milk was used. But because of the inability of the infants to absorb lime salts from sterilized milk, it should never be kept up a long time, since it tends to affect the growth of bone. In addition, the normal ferments are all destroyed by sterilization.

L. Natanson<sup>3</sup> describes *Kobrak's Pasteurizing apparatus* and gives the results of his experience with it. The apparatus consists of a covered cooking vessel. This is filled with water up to the indicating mark and is placed over the fire. As soon as the water comes to a boil the vessel is removed from the fire and one liter of cold water is added. Into this the bottles containing the milk are placed; within five minutes the milk will have attained a temperature of 65° C. (149° F.). The bottles are corked with Fluegge's glass stopper. The whole apparatus is finally placed over three pieces of incandescent charcoal which give off a uniform and constant heat. In order to determine the efficiency of his apparatus, Kobrak added 5 c.c. of a bouillon culture of streptococcus, bacillus coli and diphtheria bacillus to 75 c.c. of milk, and then Pasteurized the mixture. Agar plates inoculated an hour and a half afterward failed to show any growth.

Kobrak's apparatus is identical in principle and con-

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(1) *Jahrbuch für Kinderheilkunde*, 1902.

(2) *Jahrbuch für Kinderheilkunde*, January, 1903.

(3) *Berliner klinische Wochenschrift*, Jan. 12, 1903.

struction with that of Freeman. Freeman, however, places the bottles in the vessel as soon as it is removed from the fire, without adding any cold water, thus raising the temperature of the milk a little more rapidly and somewhat higher — a disadvantage in Pasteurizing. Chemical changes are brought about which alter the milk and interfere very much with its use and efficiency as a food. The temperature should not exceed 70° C. (158° F.). To avoid the necessity of controlling the temperature with a thermometer, Kobrak adds one liter of cold water to 4,500 gm. of boiling water. This reduces the temperature to 65° C. in five minutes. This average temperature is then maintained by means of the charcoal, a decided advantage over Freeman's method. Natanson conducted a series of experiments with Kobrak's apparatus and found that in only a few instances were all the bacteria killed after one and a half hours' Pasteurizing; that the apparatus is too large and unwieldy to be used conveniently in the family; that only large quantities of milk can be Pasteurized, and therefore when only small quantities are needed much milk is wasted. Although the principle of the apparatus is correct theoretically, it is not practicable. The author prefers a smaller apparatus of simple construction, and the regulation of the temperature with the thermometer.

Bunge<sup>1</sup> discusses the *increasing inability of women to nurse their babies, with the causes and the remedies*. He grows enthusiastic over his subject, though we cannot agree with his deductions.

The mortality during the past year in Berlin, he says, is six times greater among artificially fed children than among breast-fed children. Bunge inquires why mothers do not nurse their own babies. A small portion of mothers find it inconvenient to nurse; another and a larger number find it impossible on account of pressing domestic duties; the largest number, however, are physically incompetent. This inability is on the increase.

To ascertain the cause of this inability, Bunge began a statistical investigation in order to determine if this insufficiency of milk secretion was hereditary, also if symptoms of degeneration were present. He believes that he has shown that heredity is responsible in part for this condi-

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(1) München. Reinhard'sche Buchhandlung.

tion, and that heredity, in connection with degeneracy, leads to the small resistance against disease of all kinds, for example, tuberculosis, neuroses, dental caries. Such a combination of causes is sufficient to explain the increasing inability of mothers to nurse babies. The children are insufficiently nourished and in consequence the degeneration increases from one generation to the other and leads eventually to the loss of the maternal function under consideration.

In order to overcome this degeneration, Bunge proposes: first, prevention of the causes, and second, natural selection. To accomplish the first purpose, he would demand the abandonment of alcohol. He believes that alcohol addiction operates as an important cause in the inability of mothers to nurse. To comply with the second proposition, that of natural selection, Bunge requires that no one should marry a woman (a) who was not nursed by her own mother; or (b) who comes from a tubercular family; or (c) in whose family there are psychopathic taints; or (d) who is the daughter of a drunkard; or (e) who has carious teeth.

In *refutation of the entire article* quoted above, A. B. Marfan<sup>1</sup> comes to the conclusion that the proposition of v. Bunge in which he considers a physiologic inability of women to nurse, does not apply to those of Germany, France, or England. He believes that the inability of a woman to nurse, if due to the influence of heredity, could occur only when absolute inactivity of the organs had been present continuously for several generations. The biologic injunctions of Bunge, with reference to natural selection, Marfan treats as an *argumentum ad absurdum*.

Mme. Bronislas Dluski<sup>2</sup> found that 99 per cent of 500 women in the maternity of Pinard could, with suitable diet and rest, nurse their infants. Four-fifths of them could do so from the start, whereas the others required more time for development of the power. Prof. Marfan in his private practice found that of 108 mothers, 20 made no effort to nurse, 24 were to all appearances unable to do so; of the remaining 64 (59.2 per cent) 9 were exclusively and 21 were partly fed on animal milk. In city (Paris) practice,

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(1) *Revue Mensuelle des Maladies de l'Enfance*, January, 1902.

(2) *Deutsche medicinische Wochenschrift*, Oct. 30, 1902.

two-thirds of the women were good wet nurses and one-tenth at the most unable to nurse.

Blacker of London states that of 1,000 multiparæ, only 11 were unable to nurse on account of absence of milk; it was for other reasons that these women nursed only 986 (62.7 per cent) of the total 1,572 children.

In the maternities of Berlin, the ability to nurse is less than in Paris and Munich. Of 195 children leaving the institution, 33 were fed artificially and only 93 nursed at the breast two weeks after. The children were mostly illegitimate. In Berlin, with every census, the number of children under one year fed at the breast is estimated, and is found to be on the decline.

Census of	Mothers' Milk.	Wet Nurse.	Mothers' and Animal Milk.	Animal Milk.	Insufficient Data.
1885	55.2%	2.7%	4.0%	33.9%	1.4%
1890	50.7%	2.2%	1.6%	42.5%	
1895	43.1%	1.4%	1.7%	45.3%	0.2%
1900	31.4%	0.7%	3.2%	54.8%	3.8%

Among the well-to-do, the cause may lie in improved methods of preparing artificial foods. For the others there must be another cause. Among the poor in 1885, 60.1 per cent, in 1890 56.6 per cent and in 1895 48.2 per cent were breast-fed. In the mothers age and outdoor work are factors in the diminution in the number of breast-fed infants.

Sykes,<sup>1</sup> writing on *the milk supply of large towns*, says that Henry de Rothschild, of Paris, was charged with the investigation of this subject. He dwells at length in his report on the contracts made between farmers and companies supplying milk to infants. Sanitary inspectors, as well as veterinary, are obliged to make their reports from time to time. The systems of Copenhagen, London, New York, etc., are described.

Sykes, broadly speaking, considers that the teaching of personal health and domestic economy in the home is the best solution, and that public money would be better spent upon health visitors teaching mothers the proper methods

(1) British Medical Journal, April 18, 1903.

of feeding and rearing infants than upon supplying humanized milk indiscriminately.

Dr. Sykes has further explained in a letter to the *British Medical Journal* the utter want of legal control over the middleman milk-dealer, which paralyzes the efforts of sanitary authorities to follow the chain of adulteration through the retailer, middleman, and the farmer.

Pasteurized or sterilized milk as a factor in the etiology of scurvy and rickets requires further study.

## DISEASES OF THE DIGESTIVE ORGANS.

**Aphthae.** A study of the *relation of foot and mouth disease to aphthous stomatitis* is presented by E. F. Bush.<sup>1</sup> He has been able to trace the source of infection in 9 cases (4 in adults and 5 in children) to the milk of cows that were suffering from foot and mouth disease. There is a contagious and noncontagious aphthous condition of the young in both the bovine and human families—and the similarity between the two is so marked that it is difficult to separate them. The only way to diagnose in children a stomatitis aphthosa acquired from the *bovine race* is to confirm the fact that the milk comes from an infected herd. However, no matter how severe the infection may be, if it is caused by the milk it subsides very quickly by simply stopping the milk, hence the method of differentiation between contagious and noncontagious stomatitis is simple and obvious—stop the milk.

**Summer Diarrhea.** The following three articles on the summer diarrheas of children appeared in *The Philadelphia Medical Journal*, July 26, 1902. These papers on account of their importance are abstracted somewhat fully even at the expense of repetition. They represent the very best thought upon the subject of treatment in these disorders. In short the emphasis should all be placed upon prevention. Drugs should play a minor or insignificant rôle. Prophylaxis, hygiene, and correct feeding should be the all important factors in the treatment of these cases.

Harris treats this subject by pointing out that summer

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(1) Journal American Medical Association, June 30, 1903.

diarrhea occurs during the hot weather, and is most prevalent in over-crowded districts and unhygienic surroundings. It occurs principally in bottle-fed children, and there is little doubt that improper food and feeding are the primal causes, in the great majority of cases.

In acute gastroenteric infection we find at autopsy nothing beyond a slight congestion and hyperemia, and perhaps a little thickening of the mucous membrane: in cholera infantum, also, there is simply a superficial congestion. In ileocolitis there is a decided ulceration of greater or less severity in the colon.

**Treatment.** Strict attention must be paid to the feeding of all children, whether they be breast-fed or bottle-fed. In every case of diarrhea stop the milk at once, whether breast or bottle and give a purge to clean out the canal. Withhold all milk until all acute symptoms have passed, which is usually from a few days to a week. Bismuth is the only drug found to be useful. Good results have been obtained from irrigation of the colon with cold normal salt solution, or with sodium bicarbonate solution, one ounce to one quart. In all cases absolute rest in the recumbent position must be insisted upon. Rocking is bad for a sick child. In cholera infantum the surface temperature should be restored by hot applications and enemata of hot salt water given. If hypodermic stimulation is needed, morphin and strychnin and brandy act well. It is often necessary to give normal salt solution under the skin. In very young infants, or those who are severely prostrated, panopepton, or liquid peptonoids in doses of 15 to 30 drops acts as an excellent and often necessary stimulant. Gastric lavage is indicated when vomiting persists, and in serious cases.

Westcott undoubtedly strikes the keynote of the entire subject when he says that the *cardinal principle of prophylaxis lies in pure cows' milk as a basis of infants' food*. By pure milk is meant the mixed milk of a herd of perfectly healthy, tuberculin tested cows. It contains a fair constant average percentage of fat, proteids and sugar, is free from artificial coloring matter or preservatives, and contains a minimum quantity of bacteria of all varieties to the cubic centimeter, with complete absence of any variety of organisms. As a means to this end, a rigid periodical inspection

by a competent veterinarian, of the health of the cows, and of the sanitary condition of the dairy barns must be insisted upon; likewise an inspection of the personal health of the dairy hands, and their freedom from contamination by contagious diseases; the most scrupulous cleanliness and asepsis in the preparation of the milk for delivery, including sterilization of all implements and vessels coming in contact with the milk, and the plentiful use of ice from the time the milk is bottled to the time of delivery to the consumer. In the city, it is highly important to insist that the milk be delivered into the hands of a member of the household. What has been said of the purity of the milk, applies with even greater force to cream. Any of the gravity cream ordinarily sold is unfit for infant feeding at any time. In extremely hot weather, Pasteurization, or even sterilization of the milk, may be resorted to as a means of preservation, but it must not be forgotten that neither of these processes can make wholesome a milk already unfit.

It is often advantageous to weaken the strength of the baby's food mixture during the hot weather. In many instances the danger of serious milk poisoning may be avoided, if, at the slightest sign of disturbance of the bowels, the mother has been instructed to stop milk feeding at once and give a good dose of castor oil.

**Dietetic Treatment.** The first dietetic principle is absolutely to interdict the use of cows' milk. Milk starvation conjoined with intestinal antisepsis for the middle gut and enterocolysis for the large bowel, constitute the chief therapeutic formula for the treatment of such conditions. The most common mistake is to resume milk feeding too early, thereby furnishing material for reinfection within the intestinal canal.

J. H. McKee says that if the maternal milk be too rich in proteids it may cause intestinal indigestion in the infant. In such cases the rules laid down by Rotch are of importance. (1) Effect dilution of the proteids by giving the baby water before each nursing. (2) Lessen the amount of proteid in mothers' diet. (3) Make the mother indulge in physical exercise up to the fatigue point. In neurotic mothers, nothing benefits the quality of the milk so much as tonics.

With hand-fed babies we strive to prevent intestinal indigestion by the adoption of a milk formula suited to their digestive powers and their nutritional needs. The author's preference is for the simple method of Bauer. During dentition or when the digestion of the infant is weakened from any cause, the percentages of solid constituents must be temporarily decreased, in spite of the fact that the infant has been thriving upon a stronger formula. For the infant in the second year, two diet lists should always be provided, one for the first half of the year and the other for the second.

**Environment.** Overcrowding, particularly where there are other babies with diarrhea, infected water, dirty toys and other unhygienic conditions may one or all constitute direct causes of summer diarrhea.

**Treatment.** In the treatment of any form of summer diarrhea in the infant, the chief consideration is the diet. With the slightest dyspeptic disorders, such as may attend dentition, the weaker milk formula, or the peptonization of the milk carries us over the period of weakened digestion. When milk infection is present, or is suspected, one should invariably withdraw the milk. Boiled water should be given at frequent intervals. During the second day, or if the infant becomes ravenously hungry, the use of barley water is recommended. Many babies will not take this, in which case, one may add a few drops of aromatic spirits of ammonia to the barley water. Beef juice, if properly prepared, is usually well borne on the second or third day and may be given in much larger amounts than those commonly advocated. Milk feeding should be resumed gradually, probably never sooner than forty-eight hours after the symptoms have subsided.

**The Purge.** A purge or laxative should always be given as a preliminary to other treatment, and not infrequently such drugs must be resorted to several times. In obstructive cases and in all infectious cases, calomel is the best drug.

**Astringents.** These should not be administered while there are fever and foul-smelling stools, unless the movements are very frequent and are exhausting the patient. For acute cases the salts of bismuth are the only ones much used at the present time. In chronic cases, silver nitrate

in doses of  $\frac{1}{2}$  grain, administered three times daily, one-half hour before feeding, is a remedy of signal value.

**Intestinal Antisepsis.** The author uses salol in the treatment of summer diarrheas, and believes, with benefit. To an infant of one year, the dose is 1 grain given every two or three hours.

**Opium and Its Preparations.** Opium or morphin is needed in relatively few cases of infantile diarrhea. Its indications are practically three: (1) After the odor of the stools has lessened and the temperature has fallen; (2) to control pain, with great restlessness and loss of sleep; (3) in cholera infantum. Opium used in a suppository is certainly most efficient in meeting the first two indications. One-twentieth grain of the extract may be incorporated in a small suppository and may be repeated in from four to six hours, if necessary. In cholera infantum, morphin, preferably in combination with atropin, should be given hypodermically.

**Enteroclysis and Hypodermoclysis.** These measures are indicated: (1) If irritating materials still remain in the bowel and have given rise to mechanical or bacterial disturbances. (2) In acute cases if fever and foul-smelling discharges persist for several days. (3) In cholera infantum, when it should be supplemented by lavage. If such cases are seen early in the attack when the temperature is quite high, iced saline solutions are very valuable for lavage and enteroclysis; but when prostration has supervened and the temperature is very low, hot solutions are preferable for both purposes. McKee still uses a soft catheter for enteroclysis. The funnel, or bag that holds the fluid should never be held or suspended more than two or three feet above the patient.

**Stimulants.** In mild cases these are not needed, but in those in which marked prostration is present, alcohol is most valuable. Neither brandy nor whiskey should be given needlessly, but when a stimulant is called for, either one, in doses of from 10 to 30 minims, is indicated. In cholera infantum, atropin sulphat, 1-600 to 1-400 of a grain, and strychnin sulphat, 1-300 to 1-250 of a grain, are both drugs of worth.

**Treatment of Fever.** The cold pack supplemented by friction is the best agent we possess to combat the effects

of high temperature. In cholera infantum, which has advanced to the second stage, the hot bath, mustard bath, or hot pack may serve to improve the surface circulation.

**Complications.** The most frequent and most feared complication is catarrhal pneumonia. Its treatment does not differ from that of catarrhal pneumonia observed under different conditions. Nephritis is a complication which appears more rarely than was formerly thought, but must be energetically treated when it occurs. The treatment must be initiated by a withdrawal of the animal proteids from the diet. Spartein sulphat has proved to be a most valuable drug. Caffein and nitro-glycerin are also valuable remedies. The hot pack is most efficient in stimulating the skin to activity.

**Convalescence.** This period should be most carefully watched and managed. Strychnin, arsenic and iron are the best of the tonic remedies at this time. Nature's tonics are of predominant importance.

J. L. Morse<sup>1</sup> says that the acute diarrheas of infancy may be divided on the basis of etiology into two main classes, those of nervous origin, and those due to the action of microorganisms.

The *diarrheas of nervous origin* are the result or manifestation of increased peristalsis. This may be caused by various conditions acting through the central nervous system or by the mechanical action of undigested food. Simple diarrhea creates a susceptibility to invasion of microorganisms.

The treatment consists in the removal of the cause. In cases of undigested food, calomel in 1-10 grain doses, till one grain has been taken, with one grain of soda bicarbonate with each dose, may be given. Lavage of stomach or colon. If diarrhea persists, opium and astringents, to check peristalsis, should be given. No food for a few hours, then dilute, highly alkaline, Pasteurized milk may be given.

There should be the best possible hygienic surroundings. The country or seashore during summer. Overfeeding should be guarded against; the deficiency should be made up with water. Fresh and sterile food is of great importance. The treatment should be hygienic. Opium and as-

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(1) Journal American Medical Association, May 2, 1903.

tringents should be reserved for cases with frequent bowel movements containing little or no fecal matter, keeping the child awake, and rapidly wearing out its strength.

The *infective diarrheas* may be classified as fermental diarrheas, cholera infantum and ileo-colitis. Of these, the first is the most common.

In the treatment of fermental diarrhea, the alimentary tract should be emptied from both above and below, as well as by purging. A good deal of water should be given; also subnitrate or subgallate of bismuth, 4 to 8 grains in twenty-four hours; also zinc sulphocarbolate,  $\frac{1}{2}$  to  $\frac{1}{4}$  grain. The treatment of ileo-colitis should be the same in cases of fermental diarrhea.

In the treatment of cholera infantum, the indications are (1) to empty stomach and bowels of their toxic contents; (2) to supply fluid to the tissues which are being so seriously drained; (3) to restore the surface circulation; (4) to reduce the temperature; (5) to keep the patient alive until the disease has run its course.

From a careful study of the bacterial flora in a number of cases of summer diarrhea, and of 42 typical cases of the disease, C. W. Duval and V. H. Bassett<sup>1</sup> succeeded in isolating the bacillus dysenterica of Shiga from the stools. The specific organism was secured also by scraping the intestinal mucosa at autopsy, and in one case from the mesenteric glands. These bacilli are identical and agree in morphology, cultural features, pathologic properties, and their reaction to specific serum with the dysenteric bacillus isolated from cases of acute dysentery by Shiga in Japan, and Flexner and Strong in the Philippines; also Kruse in Germany and later by Vedder and Duval in this country.

This bacillus was not found in the stools of 25 healthy children, nor in the stools of those suffering with simple diarrhea, marasmus, or malnutrition, nor did the blood serum of these latter individuals agglutinate the dysenteric bacillus. The writers believe their findings justify them in the conclusions that the summer diarrheas of infants are caused by intestinal infection with the bacillus dysenterica of Shiga, and are therefore etiologically identical with the acute dysentery of adults.

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(1) American Medicine, Sept. 13, 1902.

In the treatment of summer diarrhea *as much of the intestinal contents as is possible must be removed by laxatives*, says C. Kerley.<sup>1</sup> Castor oil, or calomel is preferred. Infrequent stools and a high temperature call for a repeated dose of the laxative. Milk in any form should be stopped at once. Carbohydrate substitutes give the best results, as Robinson's barley flour or rice water. One or two ounces of chicken, mutton, or beef broth may be added to five or six ounces of gruel; these should be used sparingly, as they have a laxative effect. The author thinks egg albumin water will do as much harm as milk. The patient is to be kept in the largest room in the house, and if there is fever, cold water spongings should be given three or four times a day. As to drugs, bismuth subnitrate in large doses, 10 to 20 grains every hour, gives the best results. If black stools do not result, the use of lac sulphur in 1 grain doses is advocated. Opium is of service if the stools are very numerous, eight or more in twenty-four hours, and are large and watery. If heart stimulants are necessary, strychnin and strophanthus are ordinarily employed. Irrigation of the colon is of much service when the stools are infrequent and contain mucus and blood. It is rarely advisable to do this more than twice in twenty-four hours. The tube should be introduced at least 9 inches. From one to two quarts of saline solution are employed. In the average case this is used lukewarm. When the patient's temperature is high, an irrigation with salt solution at 70 degrees will act as an antipyretic.

**Recurrent Vomiting.** From a study of a half dozen cases of *recurrent vomiting in children*, one his own, D. L. Edsall<sup>2</sup> concludes that the symptoms are due, in the majority of cases, to the presence of an excessive amount of acids, which are produced by a reduction of the alkalinity of the tissues and of the body fluids and the loss of alkalies in the excretions. The rational treatment of the condition is, therefore, to administer alkalis in extremely large doses, in order to neutralize artificially the excess of acids present.

During the attack there is usually a marked odor of acetone and the latter, as well as diacetic acid, can be

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(1) Archives of Pediatrics, June, 1902.

(2) American Journal Medical Sciences.

demonstrated in the urine. Twenty grains of sodium bicarbonate are given every two hours, with good results.

**Pyloric Stenosis.** E. W. Saunders<sup>1</sup> thinks pyloric stenosis in infants by no means rare. He describes the clinical symptoms as follows: Vomiting of large quantities of milk without apparent cause—appearing from a day to three months after birth, and projectile in character; obstinate constipation and rapid loss in weight.

The physical signs are, progressive dilatation of the stomach, bulging of the upper zone of the abdomen which subsides after vomiting, depressed lower zone, visible peristaltic waves. Exceptionally, a pyloric tumor is found.

Examination of the stomach contents shows that the stomach does not empty itself in one or two hours, that the hydrochloric acid is sometimes in excess, but more often diminished or absent.

Signs of gastric catarrh soon manifest themselves, the stomach contents show evidences of decomposition, and vomiting of mucus occurs. The condition of the infant grows steadily worse, and fatal issue is inevitable. The condition seems to be due to a congenital hyperplasia of the pyloric sphincter, upon which spasm supervenes.

As regards treatment, medical and dietetic measures should first be employed. Among the drugs recommended are belladonna, bromids, chloral. Atropin seemed of benefit in one of the author's cases. Opiates should not be given. Gastric irritation should be treated by lavage and by giving rest to the stomach.

The diet of the child should consist of food which forms no coagulum in the stomach—whey, peptonized milk, or a mixture of both, is generally the best food. The deficiency of fat should be supplied by cod liver oil. It is well to aid the motor power of the stomach by gravity; hence, after nursing, the infant should be placed on the right side. Surgical intervention must be advised when this treatment fails. Four cases are reported.

C. Riviere<sup>2</sup> thinks that the clinical diagnosis of this condition is made more frequently than the actual occurrence of these cases, as shown by postmortem examination. Spasm and acquired hypertrophy of the pyloric muscles

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(1) Archives of Pediatrics, April, 1902.

(2) Lancet, Dec. 27, 1902.

is confused with this rare condition. In the acquired variety of spasm of the pylorus, the hypertrophied muscle presents a triangular band on cross section, while in the congenital condition a long cylindrical mass is present, which is undoubtedly due to a developmental error which also involves the stomach, duodenum and esophagus. Primary hypertrophy of the urinary bladder and colon have also been found. The author reports the characteristic postmortem findings in an infant of three months *who died of congenital hypertrophic stenosis of the pylorus*. The esophagus and the stomach, as well as the pylorus, were involved, but all the other organs were normal.

Frank W. Shaw,<sup>1</sup> in writing on *congenital hypertrophic stenosis of the pylorus*, says that so far, between thirty and forty authentic cases have been reported, which have been confirmed either by operation or by autopsy.

As to the pathologic findings, the intestines are usually collapsed, and contain little, if any, fecal matter. The stomach is more often dilated. The pylorus appears thickened, hard and resisting, and is usually conical in shape. The lumen is very much lessened. The pyloric thickening is due principally to hypertrophy of its circular muscular fibers. There is marked mucous degeneration in the glandular epithelium.

The clinical picture is one of persistent vomiting, constipation, emaciation, pain in the abdomen, and death. Some cases have a protracted course. To these belong the so-called cases of cyclic vomiting, as mentioned by Holt and others. The most important physical sign is the tumor, when present. The etiology is still a disputed point.

The diagnosis is based upon: (1) The regularity of the recurrence of the attacks of vomiting; (2) a gradual increase in severity; (3) absence of all symptoms referable to the stomach during the interval; (4) the cyclic character of the vomiting; (5) constipation during the attack and the intensely green character of such movements as do occur; (6) absence of any indication of intestinal constriction below the pylorus; (7) absence of fecal vomiting; (8) presence of a pyloric tumor; (9) gradual emaciation; (10) a process of exclusion.

Any treatment short of operative intervention has proved

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(1) Brooklyn Medical Journal, May, 1903.

unsuccessful. The author cites one case of complete, and two cases of partial, pyloric hypertrophic stenosis.

**Volvulus.** A. H. Burgess<sup>1</sup> reports a case of volvulus of the small intestine, which is a disease of extreme rarity. Sir F. Treves has not observed a case of volvulus implicating the whole of the small intestine, although he mentions the few alluded to by Leichtenstern and one recorded by T. T. Whipham in a female 19 years of age, with anatomic features similar to the one here described.

A male child, aged 8 years, was seized suddenly with violent pain and vomiting. Death within 16 hours of onset.

The postmortem showed that the whole of the jejunum and ileum, together with the cecum and commencement of the ascending colon constituted a volvulus, the pedicle of which was formed by the intertwining of the beginning of the jejunum with the middle of the ascending colon. The small intestine, cecum and lower portion of ascending colon possessed a common mesentery of considerable depth, but of very limited vertical extent, so that the commencement of the jejunum and the middle of the ascending colon were closely approximated. The root of this common mesentery did not reach below the third lumbar vertebra, and was directed much more horizontally than normal, leaving the right iliac fossa quite free from any mesenteric attachments.

**Intussusception.** A case of intussusception in an infant five months old is reported by L. Fischer,<sup>2</sup> who calls particular attention to two very prominent symptoms. First, vomiting, which may be persistent; second, no stool for one or more days. Usually there is no history of any previous gastrointestinal disorder; the vomiting and constipation occur suddenly and without warning. The intussusception begins at the ileo-cecal valve, and, passing downwards, produces a distinct tumor. It is differentiated from the swelling in appendicitis by the larger size of the tumor and the recession of the abdomen over the site of the tumor at the cecum. In the case cited the mass could be felt in the rectum about two and a half inches from the anus and extending upward for more than fourteen inches; this was estimated by the length of the catheter used. Operation

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(1) *Lancet*, Nov. 20, 1902.

(2) *New York Medical Journal*, Feb. 21, 1903.

was advised but refused; the child died on the sixth day, of exhaustion.

The following symptoms were prominent: 1. Continued vomiting. 2. Fecal impaction; no feces had been passed for over ten days, although a little flatus passed occasionally. 3. During the first few days clear blood and large masses of mucus streaked with blood were frequently expelled from the bowel. 4. Distention of the abdomen and tympanites. 5. The absence of all inflammatory symptoms such as rise of temperature. Two days before dissolution the temperature rose to 101° F. and the pulse to 160. 6. Continued crying.

It was impossible to determine the cause of the intussusception; the personal and family history were negative. The mother stated, however, that for two months she had been giving the baby a patent cathartic every day, and it is possible that the continued effect of the cathartic may have caused this condition.

The chances from an operation were decidedly in favor of the child, because it was otherwise healthy, and the diagnosis was made early. Leichtenstern reported 557 cases with a mortality of 73 per cent; Fitz treated 51 cases without operation with a mortality of 69 per cent; Ashhurst operated on 36 cases with a mortality of 83 per cent; Pilz, in 1870, reported 94 cases in patients under one year of age with a mortality of 84 per cent; from 1870 to 1891, 135 cases with a mortality of 59 per cent. The reduction in the mortality in recent years is evidently due to modern aseptic surgery.

**Appendicitis.** Amygdalitis, followed by appendicitis, nephritis and endocarditis, was observed by E. W. Mitchell.<sup>1</sup> The case under discussion was previously reported by F. Forchheimer, in the same journal (September, 1902), but the rarity of so many complications merit fuller detail.

The patient, a delicate girl of 11, had two mild attacks of "catarrhal" appendicitis the year preceding the illness. In one of these, she had complained of sore throat a few days previous, and the tonsils were red and swollen at the time of onset. The patient had had pharyngeal adenoids and parts of the tonsils removed at the age of 6, but continued to have frequent attacks of tonsillitis.

(1) Archives of Pediatrics, March, 1903.

The final attack of appendicitis was very severe, and an operation was performed from which she reacted well. The *Staphylococcus albus* was found in the pus. During the second twenty-four hours after operation, great restlessness and sleeplessness developed, the pulse and temperature rose, and only twenty ounces of urine were passed, of high color and specific gravity 1.020. The third day's urine contained albumin, and casts and blood cells were present in large numbers. The gravity of the symptoms increased, and convulsions were only barely averted. On the same night she became comatose, pulse rapid and irregular, respirations shallow and irregular. The area of cardiac dulness increased, the apex beat displaced  $\frac{1}{4}$  inch to the left of the nipple line.

At 4 A. M., the median basilic vein was opened, two ounces of blood drawn and an infusion of eight ounces of normal salt solution administered. The results from this were marked. The pulse became stronger, and respiration slowly improved, there was an increase in the amount of urine and consciousness gradually returned. With the improved action of the heart, a systolic bruit became distinct and a friction rub was heard for two days. The nephritis improved rapidly, the endocarditis slowly. At the end of two weeks a pyelitis appeared, which improved with treatment. Patient discharged from hospital on the twenty-second day, and final recovery was complete.

The author thinks the case could hardly be explained otherwise than by a generalized infection through absorption either from the appendix, or all the conditions were from some common source such as the tonsils.

A very unusual case of *gangrenous pharyngitis* in which symptoms of appendicitis appeared on the seventh day, is reported by W. Mayer.<sup>1</sup> The tonsils, soft palate and uvula were covered with a thick, dirty membrane; the cervical and submaxillary glands were large and hard. Microscopic examination revealed pus cocci but no diphtheria bacilli. On the seventh day typical symptoms of appendicitis set in, and on the ninth day an operation was performed. The appendix was gangrenous; no adhesions had formed and the gut was intact except for four pin-point perforations in the tip. *Bacillus coli* was found in the

(1) *Münchener medizinische Wochenschrift*, Feb. 3, 1903.

fluid contained in the appendix. The patient made an uneventful recovery. The author believes himself justified in tracing a pathologic relationship between the disease of the throat and the appendiceal inflammation although different bacteria were found in the two localities. The streptococcus probably was responsible for the primary infection of the appendix, but was overshadowed in its growth by the colon bacillus, a very vegetative germ.

**Foreign Bodies.** In a report before the New York Academy of Medicine, L. E. Holt<sup>1</sup> relates a case of foreign body in the intestines. The patient was a child of six months, and had an irregular temperature ranging from normal to 106°; there had been fever for about a month. No diagnosis had been made. The patient was found one morning cyanosed and struggling. A handful of safety-pins were removed from his mouth. Five days later, three, and then four more safety-pins were passed per rectum.

Holt also referred to the case of a child who had swallowed a sugar tongs about one and a half inches long and a knife which was a little longer. This emphasized the necessity for greater care in selecting for little children toys having parts which cannot be loosened and swallowed. The author said that he had made an autopsy on a child some years ago and found a safety-pin impacted in the larynx. It had apparently caused death.

H. L. K. Shaw, in discussing the paper, said that he had seen a baby of ten months in whom temperature remained between 103° and 105° without obvious cause. The blood examination was negative. On the twelfth day the temperature fell somewhat, and on the fifteenth day a long bristle was passed per rectum.

J. Finley Bell said that the rule was to give a dry, bulky diet to children who had swallowed foreign bodies, and hence it seemed to him very unwise to liquefy the feces by giving an enema, as had been done in one case.

Holt in closing the discussion said that he had heard of a child who had suffered from a severe attack of intestinal disorder for the greater part of the summer. Improvement began at once upon the passage of a large ball of hair. The child had been accustomed to sit upon a large bearskin rug and had evidently swallowed a considerable

(1) Medical Record, Jan. 3, 1903.

quantity of the hair. It seemed to him imprudent to give to little children toys covered with hair or wool.

**Intestinal Parasites.** An account of *tapeworm in children* is furnished by N. Schiodte.<sup>1</sup> Among the 9,000 children admitted to the Luise Hospital at Copenhagen during the last 24 years, 43 had tapeworm. The *Tenia mediocanellata* was found in 37, *T. solium* in 2, and *T. cucumerina*, *T. flavopunctata* and *Bothriocephalus latus* each once. In the above cases 11 were recurrences. Schiodte also adds another series from another hospital, which brings the number to 65 cases, all the patients under 14. The particulars are given in tabulated form. The exact age was mentioned in 48 cases: It was less than 1 year in 1; between 2 and 3 in 3; between 3 and 4 in 5; between 4 and 5 in 7. The sexes were nearly equally represented. The treatment was not invariably successful. Out of 40 with *T. mediocanellata*, only 26 were completely cured. The best results were obtained with *rhizoma filicis*. One child required 5 courses before the complete expulsion of the parasite, another 4 courses, and three, 2. Several had treatment before; the total number of courses was 8 in one instance. In one of the unsuccessful cases the child returned for treatment eight years later, proving that the parasite had continued to live for this length of time. The longest tapeworm was expelled from a boy of 13; it measured 14 yards. Another in a child of 15 months measured 8 yards. In another case, 6 yards were expelled, and two months later 10 yards with the scolex. From this and the other cases, he computes the growth of the worm at 10 cm. a day. The appetite in the children was ravenous or defective, or alternating periodically. The general health suffered much from the presence of the parasite and also from the courses of treatment. Some children were much emaciated, and others showed a deficient growth for their age. Nearly all the little patients exhibited pallor of skin and mucosæ, with slight anemia, possibly due to the toxin secreted by the parasite. He mentions that if the after-purge is given too soon, the children are liable to vomit it. He thinks that two or three hours should elapse. His monograph is a very complete study of the subject from all points of view.

(1) Hospitalstidende, Copenhagen. Abstract Journ. Am. Med. Assn.

A case of infection with the *double-pored dog tapeworm* (*Dipylidium caninum*), in a child 16 months old is reported by C. W. Stiles.<sup>1</sup> The hosts of this tapeworm are dogs, cats and man. While it is one of the smaller tapeworms, it cannot be regarded as harmless, as it sometimes burrows into the intestinal mucosa, making a tunnel-like channel through which the segments are pulled much like a train of cars passing through a tunnel. The clinical diagnosis is made by watching the feces for segments of the worm. Microscopic examination of the feces for the eggs is less certain than in other forms of tapeworm.

*A comparison of the various tapeworm remedies*, together with experiments to substitute other laxatives for castor oil as a tapeworm cure, is given us by E. Sobotta.<sup>2</sup> Sobotta made comparative experiments on the efficiency of pelletierin (the alkaloid of pomegranate root), and the oleo-resin aspidium. This latter is in most common use in Germany as a tapeworm remedy, and is administered in the form of capsules. The results showed that pelletierin in doses of 1 to 1½ grams for adults failed completely in those cases in which it was used. The same cases were subsequently treated with 7 to 8 grams of the extract of male fern. Owing to the fact that the poisonous male fern acids are soluble in oil, it has been recommended from some quarters that the administration of castor oil with male fern would prevent the absorption of appreciable quantities of the male fern acid and in this way prevent the symptoms of intoxication. The author, however, found no difference in the toxic symptoms, whether he used castor oil with the male fern or senna, or any other laxative. He believes that fasting one-half day before the cure, causes less distress to the patient.

**Liver Cirrhosis.** According to F. X. Walls<sup>3</sup> cirrhosis of the liver is one of the most uncommon diseases during infancy and childhood.

Alcoholism, syphilis, tuberculosis, acute infectious diseases, chronic sepsis, have all been given as causative factors. Cirrhosis secondary to nutmeg liver or heart disease, has occurred a few times.

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(1) American Medicine, Jan. 10, 1903.

(2) Therapeutische Monatshefte, 1902, No. 8.

(3) Chicago Medical Recorder, Sept. 15, 1902.

The general development is tardy, the child small and puny for its years, the nutrition poor, and the individual emaciated. Icterus, ascites, hemorrhage into the skin, or from the mouth, nose, stomach, or intestinal tract, a large liver and spleen are frequent symptoms. Venous stigmata on the face or body are commonly encountered.

The diagnosis of cirrhosis of the liver in children is not always easy. Certain other diseases have a somewhat similar symptomatology, for instance, chronic peritonitis. The prognosis is unfavorable and the course rapid, terminating, as a rule, within a year, some living only a month, others persisting for years.

Therapy has hitherto been fruitless. Could we anticipate the disease, we might hope for much by withdrawing those factors that have any baneful influence upon the child, and giving careful attention to its hygiene and diet.

## DISEASES OF THE PERITONEUM.

**Tuberculous Peritonitis.** In a most interesting paper on this subject discussing the theories of the etiology, symptomatology, diagnosis and treatment, J. Veit<sup>1</sup> comes to the following conclusions: (1) Tuberculous peritonitis is always a secondary lesion, and is either of the ascitic or adhesive variety; (2) tuberculosis of the genital organs may be primary, and consist of lesions of the reflected portions of the peritoneum covering the genital organs alone; (3) peritonitis with extensive nodule formation, which one can not attribute to certain tumors of the ovary or to carcinomatous origin should, in general, be ascribed to a tuberculous origin; (4) tuberculous peritonitis may undergo spontaneous cure, but such instances are rare; (5) tuberculous peritonitis is cured by laparotomy, though it may not always be successful because of the presence of tuberculosis in the other organs; (6) there is still no unanimity of opinion as to the rationale of these cures. Possibly it is due to the normal serum or the formation of an antitoxin; (7) in recent cases, one should operate if the peritonitis gives distress. The repetition of the operation may become necessary if one has to operate very

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(1) Gazette de Gynecologie, Jan. 1, 1903.

quickly; (8) certain chronic cases ought to be looked after immediately. If spontaneous cure is delayed, it is necessary to intervene; (9) the operation consists of a simple laparotomy in the linea alba.

Kissel<sup>1</sup> studied 54 cases of tubercular peritonitis in children under 13 years of age. He presents the following conclusions as regards diagnosis:

1. Tubercular peritonitis is more common in children than is usually supposed.

2. It can be laid down as a general rule that all cases of so-called spontaneous ascites are really due to tubercular peritonitis.

3. Not infrequently, the exudate in the peritoneal cavity will disappear under general tonic treatment and the child will regain complete health.

4. In the majority of cases, the onset of the disease is imperceptible. The parents first notice that the child becomes pale and thin, without apparent cause.

5. The presence of coincident serous pleurisy is strong confirmatory evidence in the diagnosis.

6. Thickening of the parietal peritoneum is the most valuable sign in the diagnosis. This sign can be readily elicited before adhesions have formed, by picking up a fold of the anterior abdominal wall and palpating the peritoneum between the thumb and fingers, provided the examiner is accustomed to the palpation of the normal peritoneum.

7. In exudative tubercular peritonitis, the fluid obtained by tapping is very rich in albumin and has a high specific gravity.

8. In many patients who present no subjective symptoms and only moderate objective symptoms, the whole peritoneum is found covered with a thick layer of tubercular masses.

9. Chronic ascites, due to tubercular pericarditis, affords the greatest difficulties in differential diagnosis, but this condition is very rarely seen.

10. Only in severe cases does tubercular peritonitis have a severe onset.

T. M. Rotch<sup>2</sup> thinks that a *clinical differentiation of*

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(1) Archiv für klinische Chirurgie Bd. 65, Heft 2.

(2) Journal American Medical Association, Jan. 10, 1903.

*cases based solely on the pathologic findings is inadequate* for satisfactory decision, first as to diagnosis, second as to etiology and treatment. Why laparotomy in cases of tuberculous peritonitis has proved to be curative is not definitely known. Tuberculosis of the peritoneum may be a primary infection. Most commonly, however, it is secondary. We may practically speak of three forms from a pathologic standpoint: (1) A miliary tuberculosis with ascites; (2) a fibrous form, which is essentially chronic, and (3) a later stage of the form just described in which there occurs tuberculous deposits with caseation and softening. This has been called the ulcerative form.

We are confronted with four salient questions—(a) the diagnosis of the presence of tuberculous peritonitis; (b) the detection of which pathologic form is present; (c) whether the tuberculosis of the peritoneum is localized or is secondary to tuberculosis elsewhere; (d) which of these forms is amenable to treatment and under what circumstances laparotomy should be performed.

The symptoms in infancy and early childhood of tuberculosis of the peritoneum are very unsatisfactory and obscure. The tuberculin reaction is therefore of value when it occurs, although its negative evidence is not decisive. A localized tuberculous process in the peritoneum which is chronic in its course should be treated by laparotomy. The most favorable cases for treatment by laparotomy are those with miliary tubercles in the peritoneum accompanied with ascites, while the less favorable form for laparotomy is the fibrous. In the so-called ulcerative tuberculosis of the peritoneum, on physical examination, tuberculosis is usually found elsewhere than in the peritoneal cavity, and these cases as a rule cannot be benefited by laparotomy.

Many cases of this disease in childhood and youth *may be cured by hygienic and medical measures* according to Comby.<sup>1</sup> He recommends rest in bed for weeks at a time, plenty of fresh air and sunlight, and in good weather exposure upon a portable bed in the open air. The diet should consist of milk, eggs, raw meat, meat juice and purée soups. As regards medicaments, cod liver oil, with or without creosote, glycerin, and calcium phosphat are

(1) *Münchener medicinische Wochenschrift*, Oct. 7, 1902.

useful. [For further discussion of this subject see November and May volumes.]

## DISEASES OF NUTRITION.

**General Infantile Atrophy.** Vargas<sup>1</sup> has for years been treating children under two years of age with general atrophy by means of sodium chlorid or magnesium and sodium sulphate. This treatment affords a rapid cure in the benign form. The grave form is accompanied by intestinal lesions which render recovery a rare exception. He states that in one case a child gained 3 kilograms in weight and 3 cm. in length by the twentieth day after 100 c.c. of artificial serum had been injected. In thirty minutes after the first injection the arterial tension increased and the pulse rose from 96 to 125, while the body warmth increased .50° C. [.9° F.]

The chief clinical signs of *wasting in young children*, "*athrepsia*" of Parrot, are extreme wasting and debility, vomiting and sickness, intestinal inflammation causing diarrhea of a dysenteric character, with colic and tenesmus; intense thirst, and inspissation of the blood. The urine contains an increased quantity of indol, skatol, phenol, ammonia and phosphoric acid.

**Treatment.** Malted preparations of maize, oats, wheat and rice, prepared with water. Later, milk should be added in small amounts. Calomel is a useful drug. Lecithin can be used with the greatest benefit. It is prepared from egg yolk.

**Micromelia.** Achondroplasia was the term applied to this disease by Parrot in 1878. Later, Kaufmann described the disorder under the term chondrodystrophia fetalis. Both of these terms are objectionable, and Kassowitz proposed the name micromelia, which indicates only the principal clinical feature, the short extremities. It is free from the objection urged against the other terms. Morse, who has collected the bibliography of the affection, reports but five American cases, though the disease is not so rare as this would lead one to think.

(1) Revista Med. de Bogota, XXIII, 258, Abstract in Internat. Med. Magazine, August, 1902.

Charles Herrman<sup>1</sup> reports the case of a boy 15 years of age, of Russian parentage. No similar case had occurred in the family. The mother had had 9 children, of whom 4 died in infancy. Four daughters were living, all in good health physically and mentally. The patient's birth was normal. The mother nursed him for two weeks after he was born, after which time it was necessary to place him in the charge of another woman, by whom he was artificially fed. The child was returned home when 10 months of age in a poor condition. At that time the mother noted that the head was large and the extremities short. The first tooth appeared at 9 months. He could sit up at 5 years, stand at 6 years, walk alone and talk distinctly and intelligently at 7 years.

Examination of the patient showed a marked disproportion between the different parts of the body. The head was relatively large, the size of the trunk nearly normal, the extremities very short. His weight was 60 pounds, which corresponds to that of the average boy of 9 years. The bones of the skull were well developed; the root of the nose depressed; the palate neither narrow nor high arched; the chest well formed; there were no rachitic changes in the clavicle, sternum or ribs; the scapulæ were comparatively small. In the lower lumbar region there was a marked lordosis, the sacrum being thrown upward and backward. The thoracic and abdominal viscera presented nothing abnormal.

Mentally the boy was backward; though he had been going to school for about seven years, he was only in the third primary class. In some respects he was more advanced, choosing as his companions boys of his own age rather than those of his own size. For some things he had a remarkably good memory.

The upper extremities were short, scarcely reaching the great trochanter. The shortening of the extremities was at the expense of the arm, in this case it being shorter than the forearm, reversing the usual relation. The enlarged ends of the bones and the well-developed muscles gave the limb a peculiar knotted appearance. The hand was smaller than normal, but large compared with the extremity as a whole. The fingers were of nearly equal

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(1) *Archives of Pediatrics*, January, 1903.



FIG. 1.



FIG. 2.

Fig. 1. Posterior view, showing large head, low shoulders, normal size of trunk, short scapulae, lordosis in the lower lumbar region, and muscular legs.—Herrman's Article. (Archives of Pediatrics.)

Fig. 2. Anterior view, showing depressed root of nose, short extremities peculiar articulation at the knee, and well-developed genitals.—Herrman's Article. (Archives of Pediatrics.)

length. The distal phalanges diverged from each other, a peculiarity described by the French as the "trident" form. The metacarpal bones were short as compared with the phalanges, and their heads large.

The lower extremities were short and muscular. The usual relation was reversed, the femur being somewhat shorter than the tibia. There was a marked lateral curva-

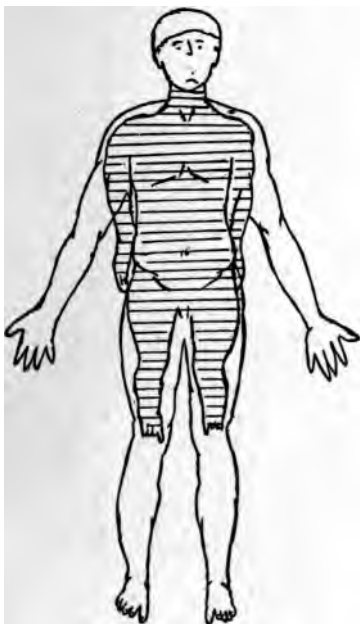


FIG. 3.



FIG. 4.

**Fig. 3.** Outline of case of achondroplasia as compared with that of normal boy of same age (15 years).—Herrman's Article. (Archives of Pediatrics.)

**Fig. 4.** The hand, showing fingers of nearly equal length, distal phalanges diverging from each other, giving the trident form.—Herrman's Article. (Archives of Pediatrics.)

ture of the legs, due to the peculiar articulation of the knee-joint. The articulating surface of the tibia was very broad, and the head of the fibula so high that it entered into the articulation of the knee-joint. The head of the femur was too large and the acetabulum not fully developed.

A number of different changes have been described, but they are not clearly differentiated. So far as the growth of the extremities is concerned, the principal trouble is in the zone between the epiphysis and diaphysis. In micro-melia this process is retarded or lacking. The cartilage



**Fig. 5. Radiograph of hand, showing the short metacarpal bones with large heads and the epiphyses of the phalanges still ununited with the diaphyses.—Herrman's Article. (Archives of Pediatrics.)**

cells, instead of being arranged in a series of columns, are irregularly grouped in masses. The lesions are referable to the period of fetal development from the third to the

sixth months. The bones of the skull, clavicle, sternum and ribs are not involved. The fact that there is a general want of development shows that the disease is not purely local. The condition should be differentiated from fetal rickets and from fetal myxedema, though it is possible for these conditions to be associated. Clinically, the cases of micromelia form a distinct class with typical manifestations.

The prognosis is unfavorable: most of the cases are still-born. If the patients outlive infancy, their vitality seems to increase with age. Thyroid extract is of no value in the treatment.

J. L. Morse<sup>1</sup> studied a case of *chondrodystrophia fetalis* in an infant two months old. The most striking thing about him was the comparative shortness of the extremities, especially of the legs. The bridge of the nose was depressed slightly, the frontal suture was open about half way down the forehead. The coronal suture was open to the length of the eyebrows. The tongue was small, the neck not unusually short. There was a slight umbilical and a large inguinal hernia. Skiagrams showed the bones to be misshapen, and bearing but a slight resemblance to normally constructed bones. The case was diagnosed *chondrodystrophia fetalis*.

The most important pathologic process in the disease is the disturbance of the normal ossification of the primary cartilage. The disease is considered to be distinct from rickets. In the latter disease the enlargement of the nodes of the long bones is due to the abnormal development of the epiphyseal cartilage. In *chondrodystrophia fetalis* it is due to periosteal overgrowth. The author points out that the disease bears no relation to cretinism, because in no case have the parents of a case of *chondrodystrophia* been cretinistic. The pathologic changes in the long bones are dissimilar in the two diseases. In cretinism, intelligence is subnormal, whereas in *chondrodystrophia* it is normal. No case has been recorded in regions where cretinism occurs. In the majority of cases the fetus dies *in utero*, but if the child is born alive it usually dies a few days after birth. The mild case may reach adult life.

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(1) Archives of Pediatrics, August, 1902.

**Malnutrition.** T. J. Elterich<sup>1</sup> cites four cases. Cases 1 and 4 illustrate malnutrition caused by starvation. In both these patients the improvement was marked and rapid as soon as the patients were placed on a suitable diet. Case 3 represents malnutrition due to a vice of absorption. It is a case of acute atrophy or athrepsia. It is difficult to manage, and in infants less than six months usually fatal. Case 4 represents malnutrition, the result of grave organic intestinal disease. Mixtures containing a low percentage of fat and proteids, and a moderate percentage of sugar, yield the best results:

Proteids .....	0.25
Fats .....	0.25
Sugar .....	4.00
Lime water .....	5.00

As an infant gains in weight the percentage of proteid and sugar is increased, but for some time fat is not raised above 1.00.

**Rickets.** Rickets<sup>2</sup> occurs in every part of the world, but more particularly in cold than in tropical climates, and in civilized rather than in savage communities. In the United States, Italian and negro children show the greatest proclivity to the disease, due doubtless to the decided change of environment from a semi-tropical to a north temperate climate.

There is no doubt that poor hygienic surroundings, coupled with unsuitable and insufficient food, are highly favorable to the production of this disease. Artificial feeding of poorly prepared foods plays an important rôle. Diseases which occur during the early period of life and which cause disturbances of nutrition also predispose to it.

The most efficient prophylaxis against rickets consists in the natural feeding and hygienic management of children during the first months of life. Prolonged lactation is a causative factor; children who are breast-fed an excessively long time may become rachitic.

Treatment must be hygienic, dietetic and medicinal. There is no doubt that rickets is less frequent, less severe,

(1) Philadelphia Medical Journal, May 23, 1903.

(2) I. A. Abt, Clinical Review, March, 1903.

and, if once established, more readily cured if children can be kept out of doors thus receiving an abundant supply of fresh air.

The dietetic treatment is of the utmost importance. The best results are obtained when (1) the food is readily digested without causing putrefaction or fermentation; (2) when it is fresh; (3) when it contains as much fat as the child is capable of digesting; (4) fruit and beef juices and animal broths exert a favorable influence in the cure of the disease.

**Drugs.** The most general, and probably the most useful, is cod liver oil. Of late, some noted students of diseases of children have advocated the administration of phosphorus. The Editor has never been able to convince himself that the results from treatment with this drug were any more brilliant than where it was not employed. Neither has he observed any decided benefit from the use of animal extracts.

The bathing of infants afflicted with rickets, in salt water, is of decided value.

In association with rickets may occur craniotabes, laryngeal spasm and tetany. Where the lymph nodes become markedly enlarged, syrup of iodid of iron, cod liver oil, the syrup of hydriodic acid or the iodid of potash or sodium are useful.

Examination of the blood in rachitic children shows that a large proportion of the cases present anemic states and that where there is glandular enlargement in addition to the anemia, leucocytosis is usually found.

The case of a boy 5½ years old, with *scurvy superimposed on rachitis*, is cited by G. Carpenter.<sup>1</sup> He was breast-fed and was not weaned until 18 months old. The point of interest in the case is the age of the patient, the common age of infantile scurvy being from 7 to 14 months. The author considers proprietary foods the principal cause of scurvy in children, the personal element playing an important rôle.

**Barlow's Disease.** Barlow's disease consists of a hemorrhagic process of bone and periosteum, which has no more to do with rachitis than that the latter may predispose to the former. It affects infants mostly. The most charac-

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(1) *Lancet*, May 3, 1902.

teristic signs are that the child cries every time it is picked up, and flexes the lower extremities on the abdomen. There is paleness and loss in weight. The joints, especially those of the lower extremities, swell up, and there is usually fever; the diagnosis of acute articular rheumatism is usually made. But close examination shows that not the joints proper, but the epiphyses, especially at the knee, are the seat of the swelling. The skin over the swelling is tense and shiny. Swellings may appear on the tibia and on the epiphyses of the bones of the upper extremity. The diagnosis of multiple osteomyelitis may be made. In children who have teeth, hemorrhages in the gums may take place.

Of 65 cases studied by O. Heubner,<sup>1</sup> there were 39 boys and 26 girls. The majority of the cases occurred late in the spring and late in the fall, and belonged to parents of the well-to-do middle class. The milk was boiled in all of the cases. The pathogenesis seems to consist of a peculiar nutritional disturbance, especially of the osseous system, a predisposition to hemorrhages in the bone marrow, periosteum, skin, mucous membranes, kidneys. The bone marrow is just as much affected as the growing bone, becoming more like embryonal connective tissue. The marrow cells lose the power to become osteoblasts and the bone ceases to grow. The spongiosa is replaced by a brittle tissue, the growth of the periosteum is impaired and the corticalis becomes atrophic, osteoporotic. Hemorrhages take place between the periosteum and corticalis of the diaphyses. The course of the disease is chronic. It differs from scorbutus of adults in that here the hemorrhagic process in the dental mucosa does not lead to necrosis; there is no abscess formation and no foul discharges as in the former. The therapy is most satisfactory. It consists of a regulation of the diet—not a drop of medicine. The juice of raw meat and raw fruit are beneficial. Raw milk was tried in 40 cases with benefit.

In commenting on the rather remarkable infrequency of Barlow's disease in Switzerland, Hagenbach-Burckhardt<sup>2</sup> raises the question whether it might not be possible that the disease is often incorrectly diagnosed. Thus far only

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(1) *Berliner klinische Wochenschrift*, March 30, 1903.

(2) *Correspondenzblatt für Schweizer Aertze*, Dec. 15, 1902.

7 cases have been reported in Switzerland, occurring in the practice of four physicians, although there is no apparent reason why Barlow's disease should be so rare in that country. To this list the author adds one case which was under his care in the Children's Hospital in Basel. The child, 11 months old, had for eight months been fed on sterilized milk and oatmeal. On admission to the hospital the examination showed a temperature of  $38.1^{\circ}\text{C}$ . [ $100.6^{\circ}\text{F}$ .]; rachitis, anemia, emaciation. The left thigh appeared to be swollen, abducted, rotated outward and immovable; extremely painful, and tender to touch. No other joint was involved. The conjunctivæ were congested and edematous. Just before coming to the hospital the child had passed bloody stools. The diagnosis rested between osteomyelitis and osteosarcoma of the femur. On the following day the temperature ran up to  $40^{\circ}\text{C}$ . [ $104^{\circ}\text{F}$ .]. The urine contained blood, but no casts. A puncture was made of the swollen femur and blood was obtained. Several days later a free incision of the left femur was made and the periosteum split. Numerous large coagula were evacuated from between the periosteum and the bone, accounting for the thickening of the thigh. The bone was smooth and normal.

A diagnosis of Barlow's disease was then made, based on the conjunctival hemorrhages, the hematuria and the blood clots found under the periosteum of the femur. The X-ray showed a normal femur (bone). Under appropriate treatment, consisting of bouillon containing the yolk of an egg, and potato soup, the symptoms slowly disappeared; the temperature persisted for some time after all the other symptoms had disappeared, and in the meantime a few petechiæ appeared on the abdomen. Three weeks afterward an oblique fracture of the femur was discovered and confirmed by the X-ray. Toward the end of the disease slight laryngeal spasms occurred which were looked upon as rachitic symptoms. They were treated successfully with phosphorus. The cure was completed three months after admission of the patient to the hospital.

Barlow's disease occurs usually at the end of the first or the beginning of the second year of bottle-fed babies, who are often rachitic also. Hemorrhages may occur as in the hemorrhagic diathesis, but the most characteristic

and distinctive hemorrhage is that under the periosteum of the femur, accompanied by intense pain and immobility of the affected limb. There is always more or less fever, and a tendency to a fatal ending.

The following queries suggest themselves in connection with this disease: Is it a separate and distinct affection? Is there an etiologic relationship between rachitis and Barlow's disease? Has the present method of sterilizing milk any bearing on the increasing frequency of this disease? What is the reason for the continued high fever? The symptoms are very similar to those of scurvy, although the microscopic findings in bone and periosteum are dissimilar. Barlow and others are of the opinion that the disease is closely allied to rachitis; further, that there is a causal relationship, inasmuch as the bone changes in rachitis favor the occurrence of hemorrhage. The high and persistent fever stamps the disease as an infection or intoxication.

Neumann of Berlin described the disease as a chronic intoxication from poisonous products formed in the milk. The disease occurs but rarely in breast-fed babies. The nourishment and its preparation seem, therefore, the most important etiologic factors to be considered. On the other hand, the disease appears to be limited in great part to certain countries, irrespective of the kind of milk used or its preparation as an infant food, and in some localities the disease does not occur even in bottle-fed babies. Therefore the manner of feeding and the preparation of the food cannot be taken as being of as much importance as the results of treatment would lead us to believe. Again, some other causes than these must be operative in breast-fed babies.

[The author above quoted could not have had infantile scorbutus in mind. A case so typical should never have been permitted to undergo the unnecessary incisions which were resorted to in this case.

It is far from proved that the disease is an infectious one; the author's deduction, "the presence of fever, hence an infection," does not necessarily follow. An accumulation of blood underneath the periosteum is sufficient to account for the pyrexia. We may invoke the so-called aseptic fermentation fever as an explanation. The hemor-

rhage may be an expression of a disorder of nutrition, entirely independent of any infective process.—Ed.]

## RHEUMATISM.

Floyd M. Crandall,<sup>1</sup> speaking of *the management of rheumatic children*, classifies the following in the rheumatic group: Arthritis, fibrous nodules, purpura, erythema, chorea, tonsillitis, endocarditis and pericarditis. The symptoms are frequently distributed through months or years. Management may be considered under four headings: Clothing, exercise, diet, medication.

The rheumatic child should wear flannel at all seasons of the year. Cold and wet feet should be especially avoided. These children should not be confined too closely to the house; damp and east winds, however, are favorable for the development of rheumatism. As to diet, the trend of opinion seems to be to limit the sugars and starches. The rheumatic child is prone to suffer from anemia, so a plain but generous and nourishing diet, which contains some nitrogenous matter, is best. Broths and properly made soups are not contraindicated. Care must be taken not to keep the child too long on a weak liquid diet. Medicinal treatment may be an important element in prevention. Salicylat of soda can be given for a week or two at a time. The results of such treatment are particularly satisfactory in those children suffering from growing pains, repeated attacks of tonsillitis, chorea or mild arthritis.

The management of acute cases is as follows: A cathartic at the onset, followed by the administration of sodium salicylat in 5-grain doses, for a child of 6 years, every six hours day and night. After the third day, if the disease seems to be under control, the dose may be decreased. For the anemia, iron and a generous diet should be given as soon as possible. Every rheumatic joint should be protected from the air by a flannel bandage, or by cotton wool. Children suffering from any rheumatic manifestation should be kept in bed until every symptom

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(1) Archives of Pediatrics, August, 1902.

has disappeared. Rest in bed will do more to prevent cardiac involvement than any other means.

*Chronic Rheumatism.* M. Méry<sup>1</sup> reports a case of chronic rheumatism in a girl 7 years old. Two years ago curvature of the spine was noted. A year later, painless, progressive swelling of the hands came on, without any fever. Six months ago she had an iritis, and a complete cataract in one eye. A month later a choroiditis, and a hemorrhage of the vitreous in the other eye. There was stiffness in some of the phalangeal joints, thickening of the lower end and anterior surface of the left radius. Radiographic examination shows hyperostosis of the lower end of the first phalanx of the middle finger of the left hand, and an abnormal curvature of the radius, where the thickening shows. The affection has not yielded to specific treatment.

Chronic rheumatism in children has received but little attention, and that only recently. The majority of the cases reported followed an acute attack of rheumatism, although it may not affect the same joints. Infectious rheumatism may be the cause.

There are two clinical forms: The first form following acute articular rheumatism, beginning in the small joints without appreciable pain. The heart is frequently affected. The prognosis in this form is more favorable. The second form sets in without painful phenomena, involving the small joints first, and is of a more serious prognosis. The disease may develop at any age, but females are more frequently affected than males.

*Rheumatic Tonsillitis.* John Stewart<sup>2</sup> writes on this subject. The disease is both catarrhal and rheumatic. The inflammation may involve the mucous membrane or the whole gland. The onset is sudden, with severe chills and fever; painful deglutition; sometimes a slight cough; an almost constant desire to clear the throat, and a peculiar nasal intonation of the voice. The disease is most frequent at the age of 5 to 15. The first attack is usually followed by others. The attack of tonsillitis is usually accompanied by muscular or articular rheumatism. Rheumatic tonsillitis may occur epidemically, especially in the fall of the year.

(1) Gazette des Hôpitaux, April 21, 1903.

(2) Medical News, May 23, 1903.

In diphtheria the membrane forms again, while in this disease it can be removed. In pharyngitis the whole surface of the pharynx is inflamed; in this disease only the tonsils are inflamed.

The treatment consists of calomel, salines, salicylates, peroxid of hydrogen, tincture of iron. If abscess forms, it should be opened.

*Imperfect development of extremities* due to articular rheumatism in childhood is discussed by G. Hoppe-Seyler.<sup>1</sup> Articular rheumatism is not as frequent in children as in adults. It leaves no changes in the joints as a rule, whereas it is usually followed by valvular lesions and chorea. Chronic polyarthritis, acute or subacute, is rare among children. Polyarthritis deformans is also rare.

Serous effusion in the joint, especially in the wrist and knee-joints, may occur; more often a periarticular swelling and thickening of the capsule and tendons, leading to ankylosis. Changes may occur in the joint surfaces and cartilages, leading to epiphyseal thickening: (1) Muscular atrophy, without changes in electrical reaction, thickening or atrophy of the skin; (2) disturbed flexion and abduction in shoulder, elbow and knee joints; (3) luxations, due to contractures and stretching of tendons, common in the metacarpo-phalangeal joints. The cervical portion of the spinal column may be affected, resulting in kyphosis and ankylosis, though only a few cases were observed.

Measurements of children who have had rheumatism showed the arm reduced in length, the forearm still more so; the same was true of the hand, foot and leg. The soft tissues were also poorly developed. Skiagrams showed the humerus and ulna to be thinner and less compact than is the case in normal individuals, as well as subluxation and deformity of joints.

Though *peliosis rheumatica* is believed by Baginsky to be non-rheumatic, Henry Heiman<sup>2</sup> finds clinical features which indicate a correlation with rheumatism. The onset of peliosis is usually with a sore throat, mild febrile disturbance and pains in the joints. The joints of the upper limbs are more often involved in children than in adults.

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(1) Deutsches Archiv für klinische Medic'n, March, 1903.

(2) Archives of Pediatrics, December, 1902.

The joints are painful, tender, very little swollen and not reddened; the pain diminishes as the rash appears. Tender nodules sometimes occur beneath the skin. In children the constitutional symptoms are milder than in adults, the rash more extensive, more joints are involved, the duration is longer, recurrences are more common, and tender subcutaneous nodes are more frequently seen. Unger says that in children edema about the lumbar spine often occurs. Fuchs holds that there is always desquamation after peliosis and not after purpura. Monti says that the disease never occurs in nursing babies. The author describes the case of a boy of 8 with purpuric spots in the mouth, marked tenderness of the abdomen, and the development of an apical systolic cardiac murmur not transmitted to the axilla. The murmur was not audible a week later, and the cure was complete three months after the onset of the disease.

**Arthritis Deformans.** Moncorvo<sup>1</sup> reports the remarkably large number of 48 cases of this disease occurring in children. His report is of interest particularly as it strengthens the position taken by many writers that arthritis deformans often is of congenital origin, that is hereditary. In one case the lesions first manifested themselves when the child was two months old and at the age of five months the disease was well developed. The mother of the infant had suffered for years from chronic rheumatism, and there was also a history of syphilis. Only the fingers of both hands were involved in this case. The author considers the most important predisposing causes to be unhygienic surroundings, damp dwellings and improper feeding. Heredity, too, is a very weighty factor in its causation, one that too often is overlooked. Females are affected much more often than males, the proportion being 2 to 1. The joints of the fingers are affected first and from these the disease gradually spreads to the larger joints. As a rule the prognosis is good, but occasionally the disease may persist all through life. The diagnosis is made easily. It is based on the location of the lesions, the limitation of the inflammation to the particular tissue and synovial membrane, and the progressive and symmetrical course. The only treatment that is effective is the free use of iodids and electricity.

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(1) Der Kinderarzt, Vol. XIII.

A case of *arthritis deformans* with lymph gland enlargements and splenic tumor was discovered by A. F. Lemke.<sup>1</sup> The patient was 11 years of age, and the disease began in the fourth year of his life. At that time he had an attack of fever which was thought to be cerebro-spinal meningitis. Following this attack three similar ones occurred at various times. In October, 1899, he developed what appeared to be an acute rheumatism and was confined to his bed for twenty-two weeks. The mother states that the swellings first involved the knees, then the ankles and finally the wrists, the metacarpal joints showing marked swelling. About three months before he came into the author's hands the cervical spine became affected so that he was unable to rotate the head, and later on he was unable to walk. At the present time the wrists and the hands are conspicuously involved; they are tender to pressure and some joint crepitus may be elicited. The elbows, shoulders, hips and ankles are also involved, though they show no evidence of acute inflammation. The peripheral lymph nodes are everywhere enlarged.

The author feels warranted in classifying his case with similar cases described by George F. Still. The lymph node enlargements in this group of cases are constantly associated with the joint lesions as described in this case. The glands in the neighborhood of the affected joints are chiefly involved. A splenic tumor is almost always present, anemia is a constant symptom and sometimes reaches a high degree. Fever is present, but seems to depend upon the acute joint involvement. In some cases, which were marked by a sudden onset, the temperature ranged as high as 103° to 104° F. The pathologic examination shows that there is an increased vascularity of the synovial membranes, which become thickened, and very soon an increase of fluid is observed in the joint. Bacteriologic research has not developed any new points.

[A description of this disease, based upon a personal study of 19 cases by George F. Still, may be found in Albutt's System of Medicine. Two distinct types of the disease occur in children. The first one is typically described in the foregoing by Lemke. The other type does not differ essentially from the disease in adults. This last

(1) Chicago Medical Recorder, Sept. 15, 1902.

variety usually begins after the second dentition, but Heberden's nodes are rare. Most of the cases follow exposure to cold and wet. Pain is a marked symptom, and it is to be noted that it is almost absent in the first variety of the disease. The synovial membranes and the joint cartilages disappear. The bones become of ivory hardness and develop osteophytic growths at their margin. Atrophy of the muscles follows the joint involvement. The two most important theories of causation are: First, that the disease is of nervous origin, and second, that it is infectious in nature. A case which resembles the adult type was described by the Editor in the *Wisconsin Medical Journal*, January, 1903. The accompanying illustrations indicate the joint involvement.—ED.]



FIG. 6.



FIG. 7.

Fig. 6. Arthritis Deformans.—Abt's Case. (*Wisconsin Med. Jour.*)

Fig. 7. Arthritis Deformans.—Abt's Case.

A child of 2 years, seen by G. N. Acker,<sup>1</sup> suffered from a *gonorrheal vulvo-vaginitis*. Seven days after the appearance of the discharge, the right ankle showed evidences of arthritis. The right knee, left knee and left ankle became involved successively. About one month after the institution of the treatment there was no vaginal discharge, no signs of swelling about the joints, the motion was good. The treatment consisted of vaginal douches of saturated boric acid solution every three hours at first; later, twice daily. In the interval, gauze saturated with 1 to 4 per cent ichthyol-glycerin solution was kept in the vagina. Sodium salicylat in 5-grain doses was given every three hours. The joints were wrapped in cotton after the use of 25 per cent ichthyol ointment.

## DISEASES OF THE GLANDULAR SYSTEM.

Treating of *enlarged bronchial lymph nodes*, Friedlander<sup>2</sup> says the lymph nodes in relation with the trachea and bronchi may be divided into three groups: (1) the tracheal on either side of the wind-pipe; (2) the tracheo-bronchial, lying in the bifurcation and along the main bronchi; (3) the peri-bronchial, in contact with the bronchi to their fourth subdivision. Measles and whooping cough are diseases of childhood which cause irritation of the bronchial mucous membrane, and secondly, enlargement of the bronchial lymph nodes. These glands may become tubercular, either from the inhalation of the bacilli and the implantation of these organisms on the inflamed tissue, or by extension of the process from the nasopharynx through the cervical glands, or by an extension upwards from the mesenteric glands. The early symptoms of enlarged bronchial glands are often vague. A paroxysmal cough resembling the cough of pertussis, dyspnea without any demonstrable heart lesion, sleeplessness, capricious appetite and hoarseness, especially if occurring during convalescence from measles or whooping cough, are suspicious. Physical examination may be negative. Inspection and palpation may reveal supraclavicular nodes larger than

(1) Archives of Pediatrics, February, 1902.

(2) Archives of Pediatrics, April, 1902.

cervical glands higher up, or enlarged glands may be palpated in the jugular, if the head is thrown up. Percussion may give dullness over the upper part of the gladiolus or in the interscapular space. On auscultation, exaggerated respiration associated with prolonged respiration, especially if found only on the left side, is suggestive. If there is extreme compression on one of the primary bronchi, the respiratory murmur may be diminished. Marked alteration in the respiratory rhythm, when unilateral, is always suspicious, especially in the absence of other local inflammatory conditions. Eustace-Smith's sign (the presence of a venous hum over the upper part of the sternum when the head is thrown well back) is said to be of definite diagnostic value.

The prognosis is not always bad, but the condition can be cured only if the diagnosis is made early. The essentials of treatment are good food, good air and rest. The main articles of diet should be milk, eggs, meat and bread with an abundance of butter. Excess of starches should be avoided. The child should remain indoors in very damp weather only. The kidneys and bowels should be kept active. Violent exercise is not advisable.

The medicinal treatment consists of the administration of iodid of iron, cod liver oil and creosote. If the creosote cannot be given by mouth, inunctions with lanolin may be given with benefit.

[Enlarged bronchial glands are more often present than diagnosed; this has been frequently demonstrated by necropsy. The glands may be very large without producing any symptoms of pressure or obstruction. The presence of interscapular dullness is of doubtful value. It can be elicited only if the chest is very thin-walled. On the other hand, pulmonary consolidation may obscure the physical findings in this region. In front, over the sternum, a persistent thymus gland may be mistaken for enlarged bronchial glands. In a word, our ability to positively diagnose enlarged bronchial glands, unless they produce marked symptoms of obstruction or pressure, is very limited.—Ed.]

In a study of *swellings of the peripheral lymph glands in nurslings*, Arthur Baer<sup>1</sup> considers simple chronic lymphatic enlargement only:

(1) *Jahrbuch für Kinderheilkunde*, December, 1902.

Dental caries, slight inflammatory conditions of the mucous membranes, insect bites, enlarged tonsils, adenoids and puberty have all been given as etiologic factors.

The glands on examination are found to be round or long, lentil or bean, rarely walnut size. They are freely movable beneath the skin. They are at first soft, later hard, and occur singly or in groups. Microscopically they show at first an increase in the cellular elements, later a connective tissue hyperplasia. As to the frequency of lymphoid adenitis in children, the author examined 350 children and found palpable glands in every child. Froelich attributed lymphatic enlargement, occurring without apparent cause, to an intestinal catarrh. From the study of the author's cases it is clear that enlarged glands are found in children who have never suffered from intestinal catarrh. However, a direct relation between local (inguinal) enlargement and intestinal catarrh was noticed; also, that general glandular enlargement occurred in the severest forms of enteric diseases accompanied by atrophy. A direct connection could not be traced between rickets and glandular enlargement, but could be between skin affections and the enlargement of the glands draining the infected region. Yet even in these cases it was not always quite clear, for frequently an extensive skin lesion was accompanied by only a local glandular enlargement. A cause must therefore be sought elsewhere.

In the course of his study the author found enlarged glands in quite young nurslings. Twenty-five new-born children were examined, and in all these palpable glands were present, especially the axillary glands. In conclusion the author states that palpable peripheral glands in nurslings do not indicate a pathologic process, nor are they evidences of a preceding disease.

In considering the *relation of the thymus gland to marasmus*, W. R. Stokes, J. Ruhräh and C. W. G. Rohrer<sup>1</sup> assert that marasmus is due to malassimilation of the food material in the body. The pathologic changes in the thymus are based on the investigations made on necropsies of 18 cases of infantile atrophy. Sections from the various organs did not show any abnormal changes except occasional acute changes in the lungs, due to a terminal in-

(1) American Journal Medical Sciences, November, 1902.

fection. The atrophy in the thymus was the only pathologic process. This consisted of a thickening of the fibrous capsule and the trabeculae and an increase in the intralobular tissue. The connective tissue was especially increased about the blood vessels. There was also an increase in the reticulum epithelium. The most striking feature was the hyaline degeneration and increase in size of Hassall's bodies.

Changes in the Thymus Gland Due to Secondary Atrophy. The authors found that the condition was only one of degree between the changes in the gland from infantile atrophy and those of secondary atrophy.

Clinical Observations. Twelve cases were given thymus extract three times a day in increasing doses until 3 grains of the dried extract had been given. There was no appreciable change in the clinical condition.

The authors conclude:

1. Atrophy of the thymus gland is always found in cases of infantile atrophy.
2. The condition of the gland is an index of the general nutrition in infants.
3. The state of nutrition of infants may be estimated by microscopic examination of the thymus at necropsy.

## SCARLET FEVER.

**Bacteriology.** A series of experiments have been made by G. H. Weaver<sup>1</sup> with reference to the *bacteriology of scarlatina*. Cultures were made from the material upon the surface of the tonsils as early in the disease as possible, and from the skin before and after desquamation. The author's observations lead to the following conclusions:

(1) The bacteria obtained from cultures from the skin, epidermic scales and the surface of the tonsil in cases of scarlatina are the same as those found in the same locations in health, and not one of them is constantly present except the streptococcus in the throat. (2) Because of the numerous cocci which grow in such cultures, and which appear in groups of two or four, or bunches of such groups,

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(1) American Medicine, April 18, 1903.

under the microscope, it is impossible to identify them except by a complete study in pure culture. (3) Cultures made by inexperienced persons, or by those who do not fully appreciate the importance of avoiding the tongue, are especially apt to contain large diplococci or sarcinæ. (4) The streptococcus is present upon the tonsil of scarlatinal patients in enormous numbers in almost all cases.

The bacteriologic examination of the blood during life in scarlet fever, with special reference to *streptococcemia*, is considered by L. Hektoen.<sup>1</sup> The author presents the results of a bacteriologic examination of the blood during life of cases of scarlet fever with especial reference to general streptococcus infection in this disease. He found a streptococcemia in a number of the cases studied. In 2 cases the *Bacillus typhosus* was isolated from the blood, and in 2 the *Staphylococcus aureus*. He concludes that, so far as scarlatinal streptococcemia is concerned, streptococci may be found occasionally in the blood of patients suffering from scarlet fever running a mild, short and uncomplicated course; that the streptococci occur with relatively greater frequency in the most severe and protracted cases, in which there may also develop local complications such as joint inflammation; and, finally, that streptococcemia may not be demonstrable in fatal cases of scarlet fever. He concludes that no direct support can be given to the theory that scarlet fever is a streptococcus disease.

**Serum Treatment.** At a meeting of the physicians of the Charité in Berlin, von Leyden<sup>2</sup> reported his *results with serum which was secured from scarlet fever patients on the fifth or eighth day of convalescence after the fever had subsided*. He injected from 10 to 20 c.c. and has injected even as much as 40 c.c. of this serum without observing the least complication. He treated, in all, 16 cases. In 5 the results were striking; in the other cases they were less marked. Von Leyden is satisfied that the serum thus obtained is absolutely harmless. In one case of severe scarlatina he noted that three days subsequent to the injection the fever began to fall by lysis. In another the fever fell by crisis on the fourth day after the injection of

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(1) Journal American Medical Association, March 14, 1903.

(2) Berliner klinische Wochenschrift, Sept. 1, 1902.

40 c.c. of scarlet fever serum. He reports other favorable cases. He points out the great importance of taking the serum from healthy children. Every case in which syphilis or tuberculosis is even suspected should be excluded.

At the same meeting Heubner discussed the human scarlet fever serum, with which, he said, he had not yet begun experimental work. One is apt, he thinks, to compare the diphtheria serum with the scarlet fever serum. It should not be forgotten, however, that the serum therapy in diphtheria, at the very beginning, was based upon exact animal experiments. It is also known that it produces toxins, and their effect upon animals had been carefully studied before the antitoxin could be discovered. With scarlet fever it is an entirely different matter. The scarlet fever micro-organism is not known; it is even not known for a fact whether the scarlet fever poison or micro-organism produces a toxin. It is true, one believes that these toxins are produced and that the micro-organism is of a streptococcic kind.

Heubner raises a second objection, which he thinks more important than any previous one, namely, that the serum is taken from human beings. Even if the individuals be apparently well, it cannot be known that septic products have not found their way into the blood; nor can it be guaranteed that the patient has not a bronchial gland tuberculosis, or that the child was not previously syphilitic.

The use of *antistreptococcus serum in the treatment of scarlet fever* has received considerable attention during the past year. A. Baginsky's<sup>1</sup> investigation has revealed the presence of streptococci in the pharynx, internal organs, blood, bone marrow and cerebrospinal fluid of patients suffering or dying from scarlet fever. He found streptococci in the throat of 696 out of 701 children examined. The author believes streptococci to be the cause of scarlet fever.

It will be remembered that Aronson several years ago introduced an antistreptococcus serum and that the results with this in the treatment of scarlet fever were unsatisfactory. The new Aronson serum, however, prepared by immunizing animals with streptococci obtained from the throats of patients suffering from scarlet fever caused

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(1) Berliner klinische Wochenschrift, Dec. 1, 1902.

marked diminution of all symptoms almost at once. The case-histories of 4 children who grew worse with the former serum and 4 more who improved with the latter are shown in contrast. The serum was found to have an immunizing effect upon laboratory animals.

Louis Fischer<sup>1</sup> gives us some *clinical results with anti-streptococcus serum* in scarlet fever.

In 1896 Baginsky of Berlin published a series of clinical observations with disappointing results. Aronson conducted a number of animal experiments, maintaining that an important therapeutic indication for the use of antistreptococcus serum was apparent to him as long as streptococci could be demonstrated in the blood of animals. He also insists that this point should be used as a guide in the determination of when to use and when to discontinue serum. He maintains that even a very powerful serum has no direct influence on streptococci. He has found that when virulent cultures of bouillon containing streptococci are inoculated into antistreptococcus serum they multiply so that, although the serum seems to inhibit the growth of these germs slightly, there is no direct specific destruction which could be attributed to the serum. There is, therefore, something else in the animal body, in addition to the serum, which stimulates cell activity, or probably by direct cellular action produces both an immunizing and healing action. The experiments of Aronson show another important point. When an animal was first injected with healing serum, the bacteria remained local and did not enter the general circulation; whereas in animals which were not previously injected, the bacteria could be demonstrated in the blood, usually in one or two hours.

This certainly proves that there are anti-bodies in the serum which prevent this general infection. These anti-bodies belong to a class called by Ehrlich, amboceptors.

Another property of this new serum is that it produces typical agglutination of the streptococcus. This agglutination is typical, and is only possible when a concentrated serum is used. Aronson, as well as Marmorek, found the streptococci in men and animals identical. In Baginsky's 63 cases there were 9 deaths; of these, 4 cases were moribund.

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(1) Medical Record, March 7, 1903.

The serum produced by Aronson, and utilized by Baginsky and the author, is equivalent to twenty times the strength of "normal serum" (0.01 c.c. of which injected into mice will prevent septic infection of hog erysipelas). Fischer reports two cases of his own where the clinical result was striking, the necrotic membrane in the throat almost melting away after the fourth day. No secondary ill effects were noticed by either Baginsky or the author.

The bacteriology of 117 cases of scarlet fever has been studied by G. A. Charlton.<sup>1</sup> Streptococci were found in 65 of the cases. The streptococcus was invariably present if the blood was obtained during the first five days of the disease. It was also found in the urine, especially if the patient was suffering from chronic albuminuria. Class's organism (*Diplococcus scarlatinæ*) was found in cases of mild scarlatina which pursued an uncomplicated course. The streptococcus is absent in these cases. Charlton assumes that the streptococcus is a secondary infection and that it is directly responsible for the unfavorable complications, therefore the anti-streptococcus serum is indicated in the treatment of these cases. Charlton used the serum in 15 cases. In 13 the recovery was prompt without sequelæ; 2 of the patients succumbed to the disease; there was a severe degree of cervical adenitis in all these cases; in 2 the glands had suppurated. Of the fatal cases, 1 was moribund on admission, and the other was suffering from a severe pneumonia. In all the cases treated with the serum, desquamation began early and was completed in a very short time. The dose of the serum was 20 c.c., which was repeated when necessary. The temperature usually fell within two hours and became normal in from two to four days.

A case of *severe scarlet fever treated with normal blood serum* is reported by C. S. Engel.<sup>2</sup> A boy 6 years of age was taken ill with a severe scarlet fever and diphtheria. One thousand units of antitoxin were administered. The temperature fell after the injection, but very soon rose again, and from that time on severe septic symptoms appeared. The patient was so ill that death seemed to be the only outcome. Engel then injected 8 c.c. of fresh

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(1) Canadian Practitioner and Review, December, 1902.

(2) Therapeutische Monatshefte, September, 1902.

blood serum that he had removed from a patient with pleurisy. The result was astonishing. The pulse became stronger, the temperature dropped, and the patient ultimately recovered.

The author cautions against the use of the serum after it has stood for a long period of time. While he cannot draw the positive conclusion that the child would not have survived without this serum, nevertheless he points out that the question frequently arises in the acute infectious diseases whether the normal immunity of the blood be sufficient to neutralize the toxic products which are generated. He believes that in all patients the immunity can be increased by injecting normal blood serum. The alexins of the serum are soon lost, and it should be used only while fresh.

[Comment is unnecessary. No conservative physician would use serum derived from the blood of a patient ill with pleurisy. The thought of a tubercular process lies near at hand.—ED.]

**Prophylaxis.** The *prophylaxis of septic scarlatina* is considered by Wilhelm Sohn.<sup>1</sup> Loeffler was the first to find *Streptococcus pyogenes* in scarlet fever. Lenhartz of Leipzig and Pospischill of Vienna demonstrated this organism in the viscera as well as in the blood. These authors believe that the cocci are present in the mouth and in the lacunæ of the tonsils before the onset of the disease. Von Vierordt recommends mild antiseptic mouth washes and gargles, and warns against the use of poisonous substances. Heubner recommends carbolic acid injections into the tonsils in severe cases. Sohn doubts the efficiency of this measure, as the effect may last only a few hours in the living organism. The author cites a case where a child with scarlet fever was placed in a room occupied one and a half years previously by a patient with a fracture, with septic complications. The room was not disinfected and had not been used. The child died as a result of septic complications. This case made him think that pus microbes may enter the child's system from the air, and he advises thorough disinfection of rooms and isolation of septic cases of scarlet fever from non-septic ones.

**Complications.** *Erysipelas and scarlatina in the same*

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(1) St. Petersburg medicinische Wochenschrift, April 13, 1892.

*patient* is reported by P. Haller.<sup>1</sup> The case occurred in a girl of 16, and is interesting because of the streptococcus nature of the infection generally assumed for both of these diseases. This the author thinks is an argument against the use of the antistreptococcus serum in the treatment of scarlet fever.

[A discussion of the last point would involve many speculative questions in etiology and bacteriology. Is it proved that scarlet fever is a streptococcus infection? Is the streptococcus found in scarlatinal cases morphologically and biologically identical with the streptococcus of erysipelas? These and other problems remain to be worked out.—Ed.]

A peculiar case of *scarlatina hemorrhagica* was met with by V. C. de Boinville.<sup>2</sup> A case of scarlet fever is reported which had run an uneventful course, when, just as the desquamation was beginning, the patient was observed to bleed from the anterior nares. Hemorrhagic spots also appeared on the anterior aspect of the scalp. Similar spots presented themselves in the neighborhood of the knees. An eczematous rash complicated the spots, and after the appearance of this eczema, the spots bled on the slightest friction. In the meantime the patient grew progressively worse, the temperature rose higher, and on the fifth day following the appearance of this eruption the patient died, apparently from a severe toxemia.

*Purpura fulminans following scarlet fever* was observed by Hubert E. J. Biss.<sup>3</sup> A child suffered a very severe attack of scarlet fever, which did not develop any unusual features, and convalescence appeared to be established. The temperature had fallen to nearly normal, the patient was bright and comfortable, but some ulceration of the soft palate remained. At this time, cutaneous hemorrhages occurred, accompanied by hematemesis, bloody stools and oozing from the gums. The patient died thirty-six hours after the appearance of the hemorrhage. Twenty-four thousand units of diphtheria antitoxin were administered on his admission to the hospital.

The cause of *return cases of scarlet fever* is discussed by

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(1) Deutsche medicinische Wochenschrift, Aug. 21, 1902.

(2) Lancet, Aug. 9, 1902.

(3) Lancet, Aug. 16, 1902.

H. M. Gordon.<sup>1</sup> The *Streptococcus scarlatinæ* can, in some cases, persist in the pharyngeal mucus for some time after the attack. The ears (through the Eustachian tubes) and the nose are possible outlets for infective material persisting in the pharynx; and infective material from the mouth and throat may be transmitted directly (by kissing) or indirectly (by cups, towels, etc.), and finally by direct aerial transmission, as the experiments of Koeniger have shown.

There is ground for supposing that, if we could get efficient disinfection of the pharyngeal mucous membrane at the beginning of scarlet fever, we should be able to prevent not only rhinorrhea and otorrhea, but also the fatal septicemia to which the majority of deaths from scarlet fever seem to be due. According to Gordon, the fatal issue in those cases has been shown to be due to a streptococcus invasion starting from the pharyngeal mucous membrane.

Experiments were instituted to determine how far it is possible to disinfect the mucous membrane of the throat and what is the best means of so doing. The result up to the present has shown that the disinfectants most effective in reducing the number of organisms in the throat are potassium permanganat and liquor chlori. Two hours after gargling sufficiently strong solutions of either of these two disinfectants, the number of organisms in the saliva is reduced by over 80 per cent, as compared with the number present before gargling. The writer infers, therefore, that if this method of disinfection were practiced in all cases of scarlet fever, however mild, complications would be prevented and the number of return cases diminished.

An outbreak of *rubella scarlatinosa* was seen and is described by F. C. Curtis and H. L. K. Shaw.<sup>2</sup> Over 147 patients were seen, the majority being adults. No child under 12 months developed the disease. The period of incubation, as nearly as could be definitely ascertained, averaged about nineteen days. The onset was generally sudden, and, in the severe attacks, attended by feelings of malaise, headache, sore throat, slight fever, enlargement

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(1) British Medical Journal, No. 2172, 1902.

(2) Medical News, Dec. 20, 1902.

of the lymph nodes in the region of the neck, groin and axilla. In the milder form the rash and enlarged glands were the only symptoms observed. There was no sneezing nor redness of the conjunctiva in any of the cases. Sore throat was present in every case and was often very severe. Enlargement of the lymph glands was a manifestation of the disease in every instance. The lymph nodes situated along the posterior border of the sternomastoid muscle were invariably palpable. They showed no tendency to suppurate or break down, and could often be felt five or six weeks after the attack. The pulse was not rapid, varying between 80 and 100. The average temperature was 100° F., while in a few cases it rose to 102.5°. The urine in no instance showed albumin.

The Cutaneous Lesions. In the majority the color was bright red, like that of scarlet fever. Close observation showed a macular quality. There was not the punctate redness or the prolonged blanching which characterizes the scarlatinal rash. The duration of active skin lesions was generally about a week. The desquamation which occurred did not differ from that of scarlatina. Not a single death was attributable to this disease.

The Complications and Sequelæ. Rheumatism, 29; bronchitis, 4; pneumonia, 2; erysipelas, 3; erythema nodosum, 3; acute otorrhea, 12; quinsy, 3; pleurisy, 1; cystitis, 1; myocarditis, 1.

The epidemic described varies from the classical textbook description of any established acute exanthemata, yet it has many features in common with rubella. The appearance of the eruption, sore throat and desquamation suggest scarlet fever, but a closer analysis of the various symptoms shows that many of the manifestations of the epidemic are incompatible with such a diagnosis, such as the endemic character, the period of incubation, the absence of vomiting during the stage of invasion, and the slow pulse in contradistinction to the rapid pulse of scarlet fever. The characteristic strawberry tongue was not seen in any case. One of the diagnostic signs of rubella is the enlargement of the lymph glands, especially those in the region of the neck. They were invariably enlarged, even in the mildest expression of the disease.

*Variations are frequently shown by scarlet fever, measles,*

and rubella so as to render their recognition difficult, or even impossible, says J. Hall Pleasants.<sup>1</sup> He cites Dr. Dukes, who described a new disease which he provisionally called "the fourth disease." Dukes believes that the so-called fourth disease presents a disease entity. He points out that the German measles may present a varying picture clinically, which in some epidemics resembles measles, while in others it takes on more of a scarlatiniform form. This scarlatiniform variety he designates as the fourth disease.

Pleasants, in criticising Dukes' report, is convinced that the cases which were reported as the fourth disease, were in reality a mild epidemic of scarlet fever, and not a new disease. He thinks not a single symptom is mentioned that may not also occur in true scarlet fever. Pleasants treated eleven cases from the Home of the Friendless in Baltimore, all of which he took to be scarlet fever. On the whole, the cases were characterized by their mildness, but in his series he found every gradation from absolutely typical examples of scarlet fever to cases which answer in all respects to Duke's fourth disease. Of the eleven cases, two were of moderate severity, three were rather mild, six were very mild. A study of the epidemic shows that the cases were of essentially the same character, although varying in severity. The more marked cases were typical examples of scarlet fever, but every gradation was observed. In many of the cases the classical symptoms were lacking; over one-half of his cases could be placed in this latter group. Pleasants draws the following conclusions:

1. Dukes has not established the existence of a new exanthematous disease.

2. That among the cases of "fourth disease" which Dukes has described, he has included cases of undoubted scarlet fever, and probably in other instances cases of German measles.

3. In certain epidemics, scarlet fever may present a typical picture in which many of the classical symptoms may be absent, and for this reason a diagnosis in certain instances may be difficult or impossible.

Schabad<sup>2</sup> examined his scarlet fever cases for the *occur-*

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(1) Philadelphia Medical Journal, May 24, 1902.

(2) Archiv für Kinderheilkunde, 34, Hft. 3-4, 1902.

rence of genuine diphtheria bacilli. As a result of his examination, the author makes the following propositions: (1) Complications of scarlet fever with diphtheria are observed not only during the convalescence of scarlet fever, but also during the height of the disease; (2) the diagnosis of the combination of scarlet fever with diphtheria at the beginning of the disease depends upon the positive bacteriologic findings corroborated by the clinical course.

The author thinks that the clinical symptoms are of great importance in establishing a diagnosis. The absence of virulent diphtheria bacilli at the beginning of the scarlet fever does not exclude the pathologic process, and does not mean the absence of diphtheria. The author also saw cases of scarlet fever which at the very beginning showed diphtheria bacilli without causing clinical symptoms. He also believes that scarlet fever patients with diphtheria bacilli in the pharynx should be separated from other cases in which these micro-organisms are absent. He believes further that all cases of scarlet fever in which diphtheria bacilli are present should receive appropriate doses of antitoxin.

[We cannot agree with the author in the importance which he attaches to a clinical diagnosis of diphtheritic angina in scarlet fever. We doubt the possibility of differentiating a scarlatinal from a diphtheritic throat infection without a bacteriologic examination.—ED.]

Wm. L. Sommerset,<sup>1</sup> in writing on *differential diagnosis in connection with the exanthemata*, states that the eruption of German measles is essentially macular, and only by confluence does it come to resemble that of scarlatina. When the eruption is less profuse, and the individual macules retain their identity, the resemblance is rather to measles, but the crescentic arrangement formed by the partial coalescence of measles macules—crescents scalloped on the concave edge, larger scallops towards the middle of the crescent—is absent. German measles differs further in giving a leucocytosis. In the more marked cases, *i. e.*, with a more profuse eruption, not necessarily more severe clinically, the resemblance is rather to scarlet fever, and without any doubt German measles and mild scarlatina may resemble each other very closely. There is no one

(1) New York Medical Journal, May 23, 1903.

symptom on which we may rely. German measles never gives a strawberry tongue; scarlet fever does not always give it. In German measles the post-cervical glands are often enlarged—by no means invariably. Pharyngitis is common to both diseases; conjunctivitis is exceptional in German measles; either may give a flushed face. The temperature, pulse and clinical condition will not match the rash in scarlatinal proportion. German measles eruption is very likely to be patchy. German measles is more likely to be mistaken for scarlet fever than is scarlet fever for German measles. Varicella may resemble variola with perplexing exactness.

The *treatment of acute infectious diseases* is considered in one of a number of articles on this subject which Wernitz<sup>1</sup> has contributed to the literature during the past year. The principle of his treatment is to give the patient as much fluid as possible in order to combat the dryness of the mucous membranes and the thirst, and to increase the elimination of both the bacteria and their products; to dilute the circulating toxins and thus aid the tissues in forming antitoxins. The author objects to the infusion and transfusion of normal salt solution on the ground that the injection is painful and in many instances even dangerous. Frequent enemata of small amounts of water are inconvenient and troublesome to the patient, and also influence the treatment unfavorably. Wernitz uses a rectal tube of medium length, passing it into the bowel as far as it will go. Through this tube a 1 per cent salt solution is allowed to flow in slowly. If there is a desire to evacuate the bowel, the tube is not withdrawn, but the stool is passed directly into the irrigator. This procedure is repeated until the fluid comes away clear. All the manipulations should be carried out slowly and carefully, and are to be repeated every hour. One liter of fluid is used for each injection; each injection to consume about one hour. The first injection cleanses the bowel, but little of the fluid being absorbed. With the second injection considerable fluid is absorbed, and more with each succeeding injection. Rapid injections cause tenesmus, and the desire to go to stool becomes irresistible. This must be avoided. With the increased absorption of the salt solution

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(1) *Therapeutische Monatshefte*, January, 1903.

the pulse becomes full; the mucous membranes moist; the appearance of the patient is better and the symptoms are ameliorated. The function of all the excretory organs is increased, especially the skin and kidneys. The temperature increases slowly with each injection, but falls rapidly as soon as perspiration sets in. With each succeeding injection the temperature rises more slowly and does not run so high. There is no collapse; on the contrary, the patient feels better and more comfortable afterwards.

This method is free from any danger; it is not distressing to the patient, and produces good results. There is no danger of overworking the heart, because a weak heart will absorb only a small amount of fluid. The excretions are increased without requiring any increased heart action. The one objection to the method is that it consumes too much time. Judging from Wernitz's paper, it is applicable in all the infectious diseases, and if used properly, and its use persisted in, it is almost certain to bring about a speedy cure.

### MEASLES.

Much caution is necessary in the treatment of measles<sup>1</sup> in tenements, since the disease is regarded as a mild one by many mothers who live in tenements. They consider that warmth and exclusion of light are all that is required. The result is that a patient is often put in a dark inside room which is overheated and insufficiently ventilated. The resistance is so much more lowered that he becomes especially liable to broncho-pneumonia, diphtheria and tuberculosis. A patient with broncho-pneumonia following measles complicated by diphtheria is in a well-nigh hopeless condition. In four such cases the symptoms of croup were attributed to a catarrhal laryngitis complicating measles. No antitoxin was administered nor culture made until operative intervention became imperative. It should be borne in mind that symptoms of croup appearing during measles may not be due to catarrhal laryngitis, but to diphtheria. If the symptoms are severe, a large dose of antitoxin will certainly be on the side of safety.

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(1) Editorial in Pediatrics, March 1, 1902.

[The widespread epidemics of this not altogether harmless disease are positively due to want of isolation of the individual cases. It is a reflection on the state of our civilization that no isolation hospitals exist for the reception of contagious diseases. Why isolate smallpox cases and not scarlet fever, diphtheria and measles?—Ed.]

The importance of *increased hospital accommodations for the treatment of measles* is pointed out by J. H. McCollom.<sup>1</sup> The idea is commonly prevalent that measles is so mild a disease that it does not require hospital treatment. The writer disagrees with this, especially where the disease occurs among adults, who require hospital environments as much as any class of patients. He is of the opinion that Koplik's sign is always a forerunner of measles, and a careful inspection of the mouth will render early isolation possible. His observations are based on the lack of hospital facilities for the care of these cases in the city of Boston, the only place provided for them in that city being the South Department of the Boston City Hospital, where often, through overcrowding, the air space per patient is reduced to 800 cubic feet, when the least amount should be 2,000 cubic feet. He believes that the following conclusions are justified: (a) Measles is not necessarily a mild disease; (b) a great number of persons in boarding and lodging houses require hospital treatment if ill with the disease; and (c) that scarlet fever patients and those with measles may be properly protected from cross infection, a separate pavilion is imperatively demanded for the treatment of those ill with the latter disease.

Bernhard Machold<sup>2</sup> reports the case of a girl of 8 who, after having to all appearances recovered from an attack of measles, developed a bluish eruption on both lower extremities, followed by desquamation.

Writing of the *general complications and sequelæ of measles*, Adolph Rupp<sup>3</sup> says stomatitis was the only mouth complication seen in twenty years of practice. Aphthæ may occur incidentally in the course of measles.

Gangrene of gums, cheeks, fauces, tonsils and tongue is reported from hospitals and occurs in cachectic children

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(1) Boston Medical and Surgical Journal, Jan. 8, 1903.

(2) Münchener medicinische Wochenschrift, April 14, 1903.

(3) Medical Record, May 17, 1902.

who usually die. Diphtheria in these parts is also reported, but is as rare a complication of measles as nasal diphtheria.

Convulsions at the onset usually end favorably. Tremors and great nervous depression are due to other organic complications, as pneumonia and its secondary manifestations. The depression may end in coma. Measles may end in mental torpor and even in a state of mind simulating dementia. The author is rather skeptical as to whether chorea, tetany, hemiplegia, muscular atrophy, ascending myelitis and disseminated myelitis can be attributed to measles.

Cabot teaches that in mild cases no changes occur at all. During the eruptive stages there is usually no leucocytosis. In toxic attacks the blood is wanting in coagulability during the fever.

### VARICELLA.

According to the majority of pediatricians, varicella is a disease of childhood, and is rarely ever seen after puberty. In fact, puberty is regarded as the time when all susceptibility to the disease is lost, and an eruptive disease occurring after the fifteenth year should be looked upon with suspicion; the possibility of its being smallpox should be kept in mind. But Th. von Genser<sup>1</sup> is convinced that varicella in the adult is by no means as uncommon as is usually believed. In support of his position he cites the statistics of the Vienna Board of Health. During the decade ending in 1900, 29,250 cases of varicella were reported, although the actual number of cases was probably higher than this, as many physicians fail to report a disease as mild as varicella; 28,728 cases, or 98.22 per cent, occurred between the ages of 1 and 14; 522 cases, or 1.78 per cent, between 14 and 65. The greatest number of cases occurred between the ages of 6 and 7, the school age; 14.08 per cent at the sixth year, and 16.38 per cent at the seventh. After this year the percentage falls rapidly; only .35 per cent at 14; then a slight rise, .74 per cent at 15, and then a steady fall.

Comparing the frequency of varicella with whooping

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(1) Wiener medizinische Wochenschrift, No. 3, 1903.

cough and measles, the author found that whooping cough predominated during the first year of life; measles and varicella occurring with equal frequency. From two to six, varicella drops behind a little; measles and whooping cough occurring with equal frequency. From 7 to 14 varicella predominates; measles coming next and whooping cough third. After the fourteenth year measles and varicella are met with occasionally, but whooping cough disappears entirely. These figures show that measles and varicella are not exclusively diseases of childhood, but may occur at any time of life although with diminishing frequency; that most persons are susceptible to the diseases in question, but that the infection usually occurs early in life; that a reinfection may occur later in life, but not as often as is supposed.

## DIPHTHERIA.

**Bacteriology.** S. Graham Smith<sup>1</sup> contributes an important paper on the distribution of the diphtheria bacillus and the bacillus of Hofmann in the throats of "contacts" and normal persons.

An interesting portion of his paper is devoted to the study of the various types of bacilli which closely resemble the bacillus of diphtheria, the bacillus of Hofmann receiving particular attention, under which heading he shows that, whereas the bacillus of Hofmann has a very wide distribution, and its resemblances are so close to the diphtheria bacillus, it is unwise to assert that the causal agent of diphtheria is widespread, because it is by no means proven that Richmond and Salter's conclusions that Hofmann's pseudo diphtheria bacillus is an attenuated variety of the true diphtheria bacillus are correct.

The author's conclusions are:

1. Diphtheria bacilli have been found in a considerable proportion of persons who have come into contact with cases of diphtheria or with other infected persons.

2. Such persons have been shown to be in grave danger to public health, especially when frequenting schools

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(1) Pediatrics, June, 1903, from the Journal of Hygiene, April, 1902.

or institutions, and to constitute the usual channel by which the disease is spread.

3. Very satisfactory results have followed on the isolation of convalescents from the disease and of infected "contacts," where two or more consecutive negative examinations have been required before release.

4. Carefully conducted investigations amongst healthy persons, who have not at a recent date been in contact with diphtheria cases or infected "contacts," have shown that virulent diphtheria bacilli are very seldom (3 examples amongst 1,511 persons) present in the mouths of the normal population. This fact renders the discovery and isolation of infected persons a practicable possibility and offers a fair prospect of discovering and isolating the majority of them in any outbreak.

5. Diphtheria bacilli are usually distinguishable on morphologic and cultural grounds, but whenever possible it is desirable that their virulence should be tested.

6. The bacillus of Hofmann is innocuous to man, and is a very common organism in the mouths of the poorer classes. The distribution of this bacillus points to the conclusion that it is carried from mouth to mouth in the same way as the diphtheria bacillus, and therefore its wide prevalence in schools attended by poorer children is significant, as showing how widely spread and uncontrollable an outbreak of diphtheria may become unless measures are early taken to deal with infected contacts.

**Pathology.** None of the infectious diseases have so *uncertain a prognosis* as diphtheria says B. Kohn.<sup>1</sup> Death in diphtheria is due (1) to mechanical causes; (2) to the action of the toxin on the system; or (3) to one of the complications. The mechanical cause is asphyxia, the severity of which depends on the stage of the disease.

The most fatal form of toxemia takes place when a general depression of all bodily tissues occurs through the poisonous action of tox-albumins liberated by the diphtheria bacillus. Such cases are fortunately rare.

When a streptococcic infection complicates diphtheria, bronchopneumonia is most to be dreaded; in institutional statistics it is shown to be the principal cause of death. It usually occurs at the height of the disease, though it may

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(1) *American Medicine*, Jan. 10, 1903.

occur at any time. Heart failure frequently occurs when convalescence is seemingly established, when death ensues suddenly in this manner, the heart muscle is probably at fault; when prodromal symptoms occur death is thought to take place as the result of a toxic neuritis of the vagus nerve. Sudden death in some cases is due to hyperplasia of the thymus gland, lymph nodes, spleen and other lymphoid tissues, combined with hyperplasia of the heart and aorta.

Changes in the nervous system are of frequent occurrence, the lesion produced being a peripheral neuritis. Death from respiratory paralysis rarely occurs suddenly, but the symptoms are usually distressing for several days, life terminating by suffocation. The nephritis of diphtheria usually runs a favorable course, though occasionally the kidneys become extensively diseased, symptoms of acute uremia develop, and death may be directly traced to the renal condition.

Hans Eppinger<sup>1</sup> concludes from his study of hearts in patients dead of diphtheria that the post-diphtheritic cardiac paralysis is due to degeneration of the muscle fibers, caused by diphtheria intoxication. He terms it, "*Myolysis cardiac toxica*."

The heart is enlarged in all directions, rounded, the apex is also round, and looks as if made up by the left heart. The left heart is wide and impinges on the right. The same is true of the right, only in a lesser degree. The valves are not changed. Microscopically, there is a marked separation and a disturbed continuity of the muscle fibers. The ends are usually broken up into fibrillæ, are homogeneous, light gray, as well as dark, even black, without striations; sometimes, the ends have cup-shaped excavations, homogeneous and mostly black. The muscle fibers often show no striations, having undergone hyaline degeneration; disintegrated red blood cells and deformed blood vessel walls appearing as vacuoles. The process is due to edema caused by the diphtheria toxin.

**Prophylaxis.** In discussing the subject of diphtheria before a meeting of the Warren County (Penn.) Medical Society, W. V. Hazeltine<sup>2</sup> raises several points of interest.

(1) Deutsche medicinische Wochenschrift, April 9, 1903.

(2) Pennsylvania Medical Journal, July, 1902.

One in reference to the management of those patients in whom the diphtheria bacillus persists in the throat is especially striking. He says it is clearly irrational to isolate every person who happens to be carrying Loeffler bacilli in his fauces, though he urges the importance of isolating all cases of acute throat disease without awaiting the result of a bacteriologic examination.

[We cannot agree with Hazeltine. We firmly believe that if well-defined Klebs-Loeffler bacilli are present in the throat of an apparently healthy child, that child should not be permitted to attend school nor should he be admitted into the general wards of a hospital or an institution. Such an apparently healthy individual who has diphtheria bacilli in his throat, may be immune himself, or the micro-organisms may not be pathogenic in his throat, but if communicated to another child, these same micro-organisms may take on pathogenic activity and cause virulent diphtheria.—Ed.]

**Treatment.** C. G. Kerley<sup>1</sup> attributes the good results obtained in 159 cases of diphtheria treated with antitoxin to the *early use of the remedy*. In addition, it is necessary always to know when more antitoxin is required. The early use of not less than 3,000 units of antitoxin has reduced the death-rate in diphtheria to a very small percentage. This amount should be repeated if improvement is not promptly observed. When there is visible membrane, the physician should inject at once and take a culture afterward. In croup he should inject if there is inspiratory and expiratory obstruction. The patient should be seen at 12-hour intervals, and reinjection should be made if the membrane is not disappearing. A child under one year of age should receive 2,000 units at a dose; while a child over one year should receive 3,000 units at a dose.

D. Louis Cairns<sup>2</sup> claims that by the *intravenous method* the maximum influence of anti-diphtheritic serum on the tissues and also on the organisms is obtained with greater rapidity than when the serum is used subcutaneously, and those bacilli which have overflowed from the primary focus of infection into the general circulation can be reached

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(1) Archives of Pediatrics, October, 1902.

(2) Lancet, Nov. 20, 1902.

directly, while at the same time the circulating toxin is most effectively dealt with.

He considers the general indications for the intravenous injection: (1) Malignant forms of disease; (2) marked involvement of the lungs; (3) moribund condition; (4) profoundly toxemic condition.

The initial dose he gives as 20,000 to 25,000 units; if no improvement occurs within twenty-four hours, it may be repeated safely.

Five hundred cases of diphtheria were treated by A. Stanley<sup>1</sup> with antitoxin. *Skin eruptions* appeared in about one-fourth of the cases. The characteristic eruption is a typical marginate erythema lasting about three days, accompanied by malaise and a rise in temperature. The margins of the eruptions are raised and turgid. The lesion begins in maculæ and in a short time forms rings. The rash spreads most frequently from the face and trunk to the limbs, and from extensor to flexor surfaces. The occurrence of an antitoxin eruption during the course of diphtheria did not influence the prognosis seriously.

The possibility of *antitoxin affecting favorably other lesions* is discussed by D. Hirsh.<sup>2</sup> Antitoxin was administered as a prophylactic to a child who showed no signs of diphtheria, although other children in the house were suffering from the disease. The child had eczema with itching over various portions of the body and the lymph glands behind the ears were enlarged. After the second dose of antitoxin the enlarged lymph glands and cutaneous symptoms disappeared completely, whereas they had resisted other methods of treatment.

A *new variety of diphtheria serum* is announced by A. Wasserman.<sup>3</sup> Immunizing agents are divided into (1) antitoxins which act upon the bacterial poisons; and (2) sera which act directly upon the bacteria themselves. Behring's diphtheria serum is an example of the antitoxin class.

The second class acts in three ways—(a) its ferments destroy the bacteria by acting upon their nutrition; (b) some constituents of the serum produce an agglutination of

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(1) *Pediatrics*, March 15, 1902.

(2) *Klinische-therapeutische Wochenschrift*, No. 49, 1902.

(3) *Deutsche medicinische Wochenschrift*, Oct. 30, 1902.

the bacteria; (c) through chemical reaction, precipitation results.

The author's efforts have been directed toward producing a diphtheria serum which will act upon both the diphtheria bacillus and the diphtheria toxins. He found that after injecting toxins into an animal, an antitoxin or serum of the first class, with traces of the second class was recovered from the animal. If the bacteria themselves were injected, a serum of the second class was obtained. Experiments made with the diphtheria bacillus gave similar results. The Koch method of preparing the serum was employed.

If 1 or 2 c.c. of this serum are injected into rabbits or guinea-pigs, death from diphtheritic poisoning quickly follows, but if the solution is mixed with diphtheria antitoxin much larger doses may be employed. Marked reaction occurred in rabbits and goats after the injection of this solution. The blood serum of these animals caused an agglutination and precipitation in a clear culture of diphtheria bacilli. Normal blood serum or diphtheria antitoxin has no such effect. The author inclines to the belief that this experiment postulates for his serum a direct specific action upon the diphtheria bacillus, and that the variety of serum obtained depends upon the manner in which the animals are treated. The agglutination and precipitation also aids in differentiating diphtheria from pseudo-diphtheria bacilli.

The value of the author's serum in the treatment of diphtheria has not yet been determined.

Kassowitz recently wrote a paper in which he endeavored to show that the mortality in diphtheria is practically as high today as it was in the pre-serum days. This statement was vigorously attacked by Siegert, and in rebuttal Kassowitz<sup>1</sup> refers to the reports of Marfan of the Children's Hospital in Paris. Although diphtheria antitoxin is invariably used in this hospital, yet the deaths from diphtheria in 1902 numbered 271. In the ordinary cases the serum acted promptly and well; but in the malignant cases its action was slow and uncertain. According to Marfan the serum treatment of diphtheria is effective only in those cases of diphtheria that would recover without the use of serum. Whereas in the malignant cases it neither increases nor

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(1) *Therapeutische Monatshefte*, January, 1903.

diminishes the death rate. In other words, its action is *nil*, influencing the course of the disease neither one way nor the other.

[If one is surprised that there are still dissenters to the use of antitoxin, it is only necessary to recall the fact that there are still those who do not believe in vaccination. The forcible statement which Virchow made during the first period when antitoxin was used applies now as then. "The brute force of the figures permit of no doubt as to the value of the remedy." Hospital statistics do not always offer the best information as to the efficiency of diphtheria antitoxin. The most favorable results are observed in private practice where the physician is called in early and institutes the antitoxin treatment at once.—Ed.]

**Intubation.** *The changes in the management of laryngeal diphtheria treated by intubation* are pointed out by Edwin Rosenthal.<sup>1</sup> Of the very many methods devised to combat this condition only two, he says, have remained—tracheotomy and intubation—as a certain method of treatment. The choice of either operation was determined mostly by the experience of the operator until the advent of the serum treatment, since when tracheotomy has been replaced by intubation, and now we can safely assert that intubation should be the only operation for the relief of this kind of stenosis.

In one of his earliest papers on this subject ("A Report of 100 Cases of Diphtheria of the Larynx treated by Intubation," *Medical Bulletin*, September and October, 1894), he made the following observation as helpful in determining the choice between Intubation and Tracheotomy:

"1st.—To intubate always, when no professional assistance is at hand, no matter what the age of the patient.

"2d.—Under the age of 4 years always to intubate.

"3d.—Between the ages of 4 and 7 I should intubate primarily, and do tracheotomy secondarily.

"4th.—When I suspected loosened membranes or the spread of the disease into the trachea, I should perform tracheotomy.

"5th.—In the class of cases met with, in the poorer peo-

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(1) *Archives of Pediatrics*, June, 1903; also *Pediatrics*, June, 1903.

ple, when skilled attendance can hardly be obtained, intubation should always be done."

Whilst these indications still hold good and should not be disturbed, the specific character of our remedial agents are now a factor to be considered, and enter largely, as an indication. For this reason, and with an intimate knowledge of the method of using the serum, as advised by Behring, and the results obtained from the judicious and exact way, he would modify these indications by summarizing thus:—

He would intubate in every case, no matter what age, or what time of the disease, and only tracheotomize when the intubation tube either is too small and does not penetrate entirely the seat of the obstruction, or where the membranes, either loosened by the use of the serum (beginning to disappear by degeneration or the like) are pushed ahead of the tube into the trachea.

The advantages and disadvantages which belong to intubation, and which were also factors in deciding the choice of operations, have remained the same. These briefly are:

The advantages:

(1) The speed with which it can be performed. (2) Bloodlessness. (3) Lack of shock.

The disadvantages: (1) It clouds the prognosis. (2) The tendency to heart failure. (3) Its dangers—pushing down false membranes; suffocation by the finger in attempts to intubate. (4) The difficulty of nourishing the patient. (5) The difficulty in deciding when the tube shall be removed.

It is mainly due to the specific action of Behring's serum that the changes in our treatment are due, and the after-treatment is inseparably interwoven with the use of the serum. Hence with a knowledge of how the serum will work and does work, the operation for the relief of the stenosis has become an exact one. Analyzing the various cases as they are met with Rosenthal has learned to look upon this special type of the disease as a twofold one, and in his operative procedure adapts his method to whichever the case presents. These types he calls a Primary Type, or "membranous croup" (the disease beginning primarily in the larynx); and the Secondary Type, or "true diphtheria of the larynx" (the disease be-

ginning as a faucial, nasal or tonsillar diphtheria, and extending to the larynx, by contiguity).

If a primary case be seen so late as to require intubation, it may be, and in most cases will be, early enough to be influenced by the serum treatment. The danger is mostly due to the stenosis; this being relieved, and the diphtheria treated with the serum (no matter how late—provided the disease still be in the larynx only) even if it be on the 5th, 8th, or even the 10th day, a favorable prognosis can be given, and the tube be removed on the 5th day after intubation, and remain away. The explanation is: The larynx is devoid of lymphatics, there is very little toxemia, the serum used is sufficient to neutralize this, and the case should then get well. If such a case of primary laryngeal diphtheria be seen early enough (*i. e.* in the first two days), and the serum be used in sufficient dosage, the case will in all probability get well at once, and intubation not be required.

In the secondary case the picture is vastly different; the danger in these cases is not so much the stenosis as the toxemia. These are now very rare, happily. The serum treatment is sufficiently well known, and so universally and even empirically used, that this particular type is an exception. However, in cases like these even when the stenosis is not very well marked, intubation should be performed at once, or as soon as possible, thereby saving time and seizing the opportunity of doing the greatest good. When diphtheria of the larynx comes as a complication to measles or the like, and the symptoms are not recognized early enough (*i. e.* in the first two days) when a sufficient amount of the serum can be given, even as an immunizer, then intubation should be preformed at once, for the progressive secondary type belongs here, and the case may become steadily worse, as regards the stenosis before the serum produces its effect.

Suppose, says the author, a case has just been intubated. The questions to be answered are:

1. Have you intubated correctly?
2. Can you leave the case safely, or until you will return?
3. What shall be the medical treatment of the patient?
4. How feed the patient?

1. If you have succeeded in placing your tube correctly there will be at once a whistling sound followed by a cough. The child will attempt by coughing to dislodge the tube. Always use a comparatively new tube; these are always prepared in the same way, thus: When received from the gilder they are boiled for a short time in sterile water, and then placed in sublimat cotton ready for use. When about to be used again place in boiling water, and then previous to the intubation in a solution of hydrogen peroxid.

As a means of intubation, he invariably uses a spray of peroxid of hydrogen. This by means of an atomizer is thrown into the mouth, on the tonsils, into the pharynx, over the larynx, and indeed at every point in the throat that he can reach. This solution makes a rather thick lather; this is used as a lubricant, to make the tube slip easily in place, and also to prevent pushing down the loosened membranes or the like, experience having proven to him that only when the parts are very dry and difficulty is met with the tube engaging or entering the larynx, do these accidents occur. Using the solution of peroxid reduces this danger to a minimum, so that it has real value in this operation. After the tube is in place, this spray may be used several times in succession, or until the air is heard to enter and leave the tube in a normal manner unimpeded. He then ceases using the spray, and gives the patient to drink of a stimulant or the like, and being satisfied that the tube is correctly placed and that everything regarding it is in perfect order, he then considers the next step.

2. Can the patient be left alone or with such help as is not considered trained? This each case must decide for itself. Generally, if an hour elapses, the child rests easy, the air enters and leaves the lungs unimpeded, the condition of the child showing that the blood has again become filled with oxygen, and the danger from suffocation passed; the child can be left safely for any number of hours that the after-treatment may require.

3. The medical treatment depends on the type met with, that is whether it be primary or secondary, or whether it be a diphtheria pure and simple, or a complication of another disease. Each and every case, whether primary or

secondary, a complication or reinfection, is treated by the serum. In his consultant work Rosenthal generally inquires into his colleague's method of treatment and this if suitable is not changed. His whole endeavor is to treat the new condition that the presence of the tube introduces. This resolves itself into:

First.—Getting the patient to accommodate himself to the presence of the tube.

Second.—Getting the patient to take a sufficient amount of necessary food, stimulants or medicines.

Third.—Preventing any accidents from the presence of the tube, as: (a) clogging by loosened membranes, inspissated mucus or other secretions; (b) expectoration of the tube by coughing or vomiting; (c) injuries or irritations with inflammation, edema, etc., from the presence of the tube.

Fourth.—The prevention of complications or sequelæ, as: (a) pneumonia; (b) atelectasis; (c) heart failure; (d) prolonged wearing of the tube; (e) tracheotomy.

First.—The author in all his intubations always removes the thread that is attached to the eye of the tube. It causes vomiting sometimes, always calls attention to its presence, the child chews upon it, and, if permitted to remain, there is always the additional danger of the tube being suddenly withdrawn by accidentally pulling upon it. Hence the additional freedom given by its absence is greater than any security its presence gives to hastily withdraw the tube, or the like. Removing everything that would irritate, sometimes there is difficulty in getting the patient reconciled to the tube's presence. When the patient is excitable and the mere presence of the tube acts as an additional excitant, his endeavor is to quiet the patient, and the more so if it suffers the additional pain caused by the injection of a large quantity of serum, has great difficulty in swallowing, pain in the throat, possibly in the ear, and probably, most alarming and grave, a weakened circulation, evinced by an extremely rapid or dicrotic pulse (180 to 200), rapid respiration (perhaps 60 to 80) and fever.

For this purpose there is no better drug than opium, in any form. The author uses the one most familiar to the doctor, and as an example says a child of 3 has used constantly during the whole treatment 15 or 20 drops of

paregoric, every two, three or four hours as required. And in older children hypodermics of morphin or even opium in suppositories. This one drug has proven sufficient to meet all indications, and its value is far greater than one could imagine in a condition so grave as frequently presents. This condition is met with at the beginning of intubation, and sometimes after extubation, and is similar to heart failure. The greatest danger is the heart. Hence by the use of the opium the heart is placed in a splint, or in other words, the whole circulation so quieted that the most alarming symptoms subside, and assume a more favorable character.

Second.—Suitable nourishment. Where the patient is an infant, or under 2, the difficulties are greater, on account of the liquid character of the food. It is almost impossible to get liquids into the stomach without some engaging in the tube, giving rise to coughing. If it is a suckling the mother may lie down with the head lower than the rest of the body; the food thus passes over the tube. In bottle-fed babies the head can also be lowered. If older and used to a mixed diet the difficulty is not so great for here semi-solid food can be given—pap, crackers and milk, milk, oysters, etc. If still older and used to table diet, anything craved for can be given, if prepared in a manner easily digested.

Third.—To prevent the tube clogging treatment must depend on the conditions arising. Should the secretions become inspissated or dried, we can liquefy and remove them by a spray of peroxid. If this is impracticable or impossible the peroxid diluted can be used as a gargle, or even as a drink. Should the foreign substance be a piece of loosened membrane the procedure is the same, only our efforts more energetic. Should these be unavailing our recourse then is removal and, if necessary, prompt re-intubation. Another accident, and a natural result of coughing or vomiting or the tube becoming clogged, is the “extubation.” In this accident our procedure is suitable to the case. In very many instances, such a removal is a very favorable sign, and indicates convalescence. If we find the patient can exist without the tube, the case is “cured” and we need no longer use it. But if the stenosis still be present, prompt re-intubation is the rule. This accident is

more frequent with a co-existing bronchitis, or where the tube is somewhat too small for the particular age. If the patient keeps on rejecting the tube, almost as promptly as we intubate, our remedy is a larger tube. Sometimes it is necessary to use a tube one or two or even three times larger than the one normally required. It is a very good rule in such cases, where the patient lives quite a distance from the operator, to pass a larger tube at once, and thus prevent any accident from the too long absence of the tube. Whilst the introduction and the extraction may be made in the most skilful way, and the operation be entirely devoid of any injury, the tube by its presence may exert an evil influence, like any foreign body, sometimes despite every effort. The cause is the prolonged presence of the tube, that is, the necessity that compels the presence of the tube even after the initial disease has disappeared. The cause belongs to the complications, the results here. If, by the presence of the tube, an irritation of the mucous membrane is set up, this may lead to edema, or to an inflammation, which in its way, gives place to ulcerative action, this going so far as to destroy the tissues causing most alarming symptoms of suffocation. The tissues being destroyed, collapse of the cartilage takes place, and it is necessary to continue the tube for an indefinite period and to perform tracheotomy.

Fourth.—To the question, What are the present dangers to be feared? Rosenthal states that he has always given the same answers. The dangers supposed to exist are pneumonia and atelectasis; that do exist, impending and heart failure; that may result, the prolonged wearing of the tube. Pneumonia or “schluckpneumonie” as a result or complication of the intubation he has never seen, and regards it as theoretical. Pneumonia when present he has always found to be the result of the disease, not the treatment.

We cannot pursue the same method as in an uncomplicated pneumonia. In simple pneumonia we expect the certain limitation to be a factor, and treat accordingly with wet packs, sponging, or the like. The variety and course of a pneumonia in intubations is vastly different. Our endeavors should always be a supporting treatment, no wet packs. Stimulation, judicious and accurate. As the

case may be of long duration, this must not be forgotten, in the choice of remedial agents. One thing must never be lost sight of and that is the origin: the diphtheria, the measles, and the tube. Hence in the treatment our very first endeavor is to treat the diphtheria, and get rid of the tube. This can be accomplished in from five to seven days. After removal the pneumonia may still be present, or become better, or be of the catarrhal variety. The treatment of this condition must be slowly persisted in and a satisfactory result may be had. For the treatment of a co-existing pneumonia, or even where bronchitis exists in those suspected cases, as "laryngeal diphtheria following measles," the author almost invariably gives the treatment from the moment of intubation. This briefly is digitalis, in an infusion or tincture, and carbonat of ammonia, or aromatic spirits in suitable doses. Strychnin belongs (with him) to the management of every case of diphtheria, and especially those intubated. For atelectasis he uses counter-irritation, oxygen inhalations, diffusible stimulation and the like. Even after the alarming symptoms have somewhat disappeared, the results must be treated, as an edema of the lung that was the subject of the collapse.

The most frequent danger to intubation is "heart-failure," what should be done to prevent this? It is always good practice to give medicaments to strengthen the heart muscle. The author begins the after-treatment with an injection of a suitable dose of strychnin, and continues it as religiously as the nourishment or stimulant. In a case as a sequel to measles, which has been neglected or the intubation postponed, he would begin treatment with an injection of strychnin, even before the intubation and most certainly before the serum.

Hence in brief the author's treatment of intubation in laryngeal diphtheria is:

The introduction of a suitable tube, not in ratio to the age, but in ratio to the size and the condition of the child.

Food, liquid if possible, semi-liquid if necessary, and always. And solid if necessary.

Strychnin, in proportionately large and decided, perhaps in increasing doses.

The most serious question now is, *the removal of the tube.*

This requires considerable thought. It has been proven by clinical manifestations that it takes from 72 hours to 120 hours for the membranes to disappear from the throat. This is a general rule. Of course there are exceptions. However, being guided by this, Rosenthal never makes his first attempt at removal until 120 hours have elapsed; if the case be a normal one, the serum acting correctly, it may then be cured. If, however, the case cannot exist without the presence of the tube, he immediately re-intubates. He then permits the tube to remain undisturbed for 4 days more, and then attempts removal. Should there be the slightest symptom of suffocation, it remains until no longer required, a day, week or month. If the tube remains longer than the second extubation, it is called "a prolonged intubation." Here begins a change in treatment. The author begins to intubate and extubate with progressively smaller tubes until the case no longer requires them. Meanwhile the strychnin is never forsaken, and its use is continued in progressively larger doses until the cure of the patient is obtained.

**Complications.** In 1897 Escherich described a curious symptom complex consisting of *persistent generalized tetany* and contractures of the muscles of the jaw, neck, back and legs. To this condition he gave the name "pseudotetanus," classifying it as a rare type of tetany. Two forms of the disease are seen, first, intermittent muscular contractures; second, persistent muscular contractures. The intermittent form is usually observed in rachitic children, and is characterized by short, painful cramps, heightened mechanical and electrical excitability, and acute or subacute course with tendency to recurrence. Trousseau's and Chvostek's signs are easily elicited. In the persistent type, the contractures of the trunk and extremities run a painless or chronic course, continuing for weeks or months, even in sleep. The special nerve excitability may be lacking. The onset of pseudotetanus is usually abrupt. A child either previously well, or suffering from some acute infection or toxemia, is attacked with stiffness in the legs and rigidity of the jaws. The contracture rapidly extends until the patient lies helpless in bed with

trismus, opisthotonos and rigidity of the extremities. The arms may not be involved or only slightly so. Acute muscular spasms are usually mild and few in number as compared with tetanus. The classical signs of tetany may be present. The malady lasts from one to six weeks. Irving M. Snow<sup>1</sup> describes a case of diphtheria associated with prolonged contractures of the masseter and cervical muscles. From the third to the tenth day of illness, laryngismus and violent generalized muscular spasms occurred. After the tenth day the disease assumed a bronchial type with persistent trismus and opisthotonos. These contractures lasted twenty-one days unaffected by tetanus antitoxin, but were eventually relieved by morphin. Several similar cases are reported in the literature by Escherich and St. Ange Roger.

An interesting discussion of the *diphtheritic paralyses* appears in the *Medical News* of Feb. 14, 1903. P. N. K. Schwenk discussed the post-diphtheritic ocular paralyses. His observations lead him to conclude that the paralysis first appears in the fauces, affecting deglutition and successively involving the muscles of accommodation and those of the extremities. An important point to be depended upon is the fact that in diphtheritic paralysis only a comparatively small number of muscles is usually affected at the same time. Another point is that the sphincter muscles are seldom or almost never involved in the paresis. The ciliary muscles are more frequently involved as a sequence of diphtheria than any other portion of the muscular system with the exception of the velum palati. The paralysis is generally bilateral, and the paralysis of accommodation manifests itself in from 2 to 6 weeks after an attack of the disease and generally passes off in about the same time. Recovery is more rapid in the young than in those more advanced in years.

L. C. Peter<sup>2</sup> in treating the subject of paralysis affecting the general nervous system concludes that the term *diphtheritic palsy* should be applied to those palsies only which are due to direct action of the diphtheria toxin. He states that the frequency of paralysis is in direct proportion to the severity of the general infection, although a severe

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(1) American Journal Medical Sciences, December, 1902.

(2) Medical News, Feb. 14, 1903.

palsy may follow a mild type of diphtheritic intoxication. The location of the membrane is of considerable importance as an etiologic factor, diphtheria of the posterior nares especially predisposing to both local and widespread palsy. The proportion of cases followed by paralysis is variously estimated at from 10 to 30 per cent.

C. L. Felt,<sup>1</sup> in his paper on postdiphtheritic paralysis affecting the ear and throat, says under certain conditions each case will fall under one of three heads: (1) Muscular degeneration; (2) localized neuritis, and (3) degeneration. The most frequent site of paralysis is the pharynx. Myers states that 40 per cent of the postdiphtheritic palsies are confined to the palate and that in 12 per cent the palate and eye muscles are affected. The pharynx may be the only part involved, or it may be in conjunction with other parts, near or distant. The muscles of mastication are very rarely involved.

Two cases of *optic neuritis in diphtheria* are noted by Charles Bolton.<sup>2</sup>

The first case was a boy, 4 years of age. He had a severe faucial diphtheria, and in the course of treatment received 12,000 units of antitoxin. The throat cleared on the sixth day. On the fifteenth day he showed evidence of paralysis of the uvula, and some of the eye muscles, and the heart was irregular and feeble. On the twentieth day the discs were normal. On the thirty-second day there was paralysis of accommodation, some swelling of the optic disc and striation of its margin on the right side, while in the left eye the changes were still more marked. Six days later the exudation was more dense in both eyes, but especially in the left. After that time the changes subsided, and when discharged in the seventh week, the right eye was normal and the changes in the left were slight.

The second case was a girl of 16 years. She was said to have had an extensive faucial diphtheria and was not treated with antitoxin. When she came under observation she had difficulty of vision, paralysis of the ciliary muscle and palate, and some weakness in the limbs. The knee-jerks were absent. There was double optic neuritis, the swelling was slight, and there was some redness of the discs. The neuritis disappeared after two months.

(1) *Medical News*, Feb. 14, 1903.

(2) *Lancet*, Dec. 13, 1902.

A case of diphtheria complicated by acute inflammation of the mitral valve is reported by J. W. Findlay.<sup>1</sup> A girl 6 years old, who had always been in delicate health and had recently undergone an operation for removal of the tonsils and adenoids, fell sick with diphtheria which ran a severe course. Antitoxin was administered, the child doing apparently well, when on the tenth day of the disease a systolic murmur was heard over the mitral area which the author interpreted as evidence of an organic lesion. He concludes that the patient suffered from insufficiency of the mitral valve in consequence of the diphtheritic process.

[Inflammatory changes in the valves have been rarely observed as complications or sequelæ of diphtheria. Myocardial involvement on the other hand occurs very frequently. This degeneration of the cardiac muscle may lead to relaxation and dilation of the organ and in this way a relative valvular insufficiency may be established. If the patient survives, the murmur tends to disappear as the muscle recovers its tone.—Ed.]

## WHOOPIING COUGH.

**Diagnosis.** Alfred Wanstall<sup>2</sup> introduces a valuable contribution on *the leucocyte count in whooping cough*, by emphasizing the statements of Weil and Pehn who have shown that whooping cough is very contagious during the catarrhal stage, also that it becomes progressively less contagious during the spasmodic stage. In view of the fact, then, that the disease is most contagious during the catarrhal stage, a period of the disease when diagnosis is always difficult, and frequently impossible, any new point in the diagnosis must be of general interest. The author does not confirm the view that a leucocytosis is always present. He does, however, come to the conclusion from a study of about 15 cases, that an increased percentage of lymphocytes in sufficient number to equal or exceed the polynuclear neutrophilic cells, would be of value in diagnosing whooping cough. He also emphasizes the fact that the blood examination cannot be depended upon solely for

(1) Glasgow Medical Journal, January, 1903.

(2) American Medicine, Jan. 10, 1903.

the diagnosis of whooping cough in the catarrhal stage, for in the disease in question as well as for all other diseases the results of the blood examination should not be taken as the only diagnostic factor but must be considered in an individual way.

**Cause of Death.** A study of 55 fatal cases of pertussis was made by Marian McH. Hull<sup>1</sup> during an epidemic of whooping cough in an orphanage at Atlanta, in May and June, 1902, and a study of the cases occurring in Atlanta from January, 1900, to July, 1902. Five of the fatal cases occurred in the orphanage, each presenting some interesting feature. The youngest was three months and the oldest 1½ years. In three, death occurred after a prolonged period of stupor. Diarrhea, apathy and stupor were the *only* symptoms in the youngest child, even cough was absent. A fourth child seemed to have a very light attack of the disease for three weeks, when suddenly he became very much prostrated, the temperature rapidly rose to 104° and continued high until his death a week later; convulsions occurred shortly before death. The fifth and eldest infant had a previous history of marasmus, but had outgrown this. The disease ran a normal course for three weeks, though quite severe. During the second week enteritis developed and continued until death, and at the end of the third week he developed purpura hemorrhagica which gradually extended over the entire body; this faded at the end of one week but did not entirely disappear; one week before death it reappeared. During this eruption a thick, yellowish fur covered the entire mucous membrane of the mouth. Just previous to the development of the purpura, the temperature rose to 105.5° and continued above 104° for two days. The child seemed on the high road to recovery, when after a very bright day, while lying on his bed ready for sleep, he died without effort or sign of distress.

In the study of the other 50 cases reported by the writer, it was found that 25 per cent were complicated with some affection of the bronchial tract, 25 per cent with some affection of the digestive tract; among the other complications were measles, typho-malarial fever, septic peritonitis, hemorrhage; and most of these complications developed in the

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(1) Philadelphia Medical Journal, Feb. 7, 1903.

last two weeks of the disease. Boys 31; girls 24; color seems to have no bearing; the larger number of fatal cases occurred under one year of age; average duration of the cases was a trifle over three weeks. A strange feature is that the greatest number of deaths occurred during the hottest months of the year. The writer's observations have led her to conclude that the characteristic lesion of the disease is a bronchial catarrh caused by the specific micro-organism, the toxin of which acts principally upon the nerve centers.

**Treatment.** Hull thinks that the indications for treatment are (a) to support the patient; (b) to establish an equilibrium in the nerve centers; (c) to prevent further absorption of toxins by destroying the micro-organism that produces them.

Stepp<sup>1</sup> cites a happy experience in the treatment of pertussis, with *bromoform and fluoroform water*. To an infant of four weeks, he gave 1 drop of bromoform three times a day. The fluoroform water he used in a 2-2.5 per cent solution. To a child 2½ years old, a teaspoonful every hour. He states that some children have an idiosyncrasy to bromoform. Where the latter proved inert, he frequently succeeded with fluoroform water. He cites 15 cases.

[At short intervals some one vaunts a new drug for the relief of whooping cough. So many remedies have already been tried that it would seem that the list is well nigh exhausted. We must have come to the conclusion by this time that we cannot exert any specific effect on the disease by the use of medicine. By the employment of antispasmodics such as the bromids, antipyrin, belladonna and perhaps heroin (in minute doses) alone or in combination, the number and the severity of the paroxysms may be ameliorated. Children suffering from this disease seem to have milder attacks and make more rapid recovery if permitted to live an outdoor life. This is a valuable therapeutic point.—Ed.]

Naegeli's treatment of the paroxysms of whooping cough by pulling the jaw downward and forward is revived by Jacob Sobel.<sup>2</sup> The author states that two facts have been

(1) Prager medicinische Wochenschrift, March 12, 1903.

(2) Pediatrics, June, 1903.

definitely established in the treatment of whooping cough; first, that all measures to be efficacious must be directed toward diminishing the number and severity of the paroxysms, and, second, that the success of medicinal treatment thus far has been in inverse proportion to the remedies recommended for the cure of the disease.

His attention was attracted to this method in June, 1901, and for almost two years he resorted to it in a large dispensary practice, though when he began he was not aware of the original article by Naegeli (*Corresp. f. Schweizer Arzte*, 1889, p. 417). In all, 96 cases were recorded, from 3 months to 8 years of age; the cases were not selected, and were of all grades of severity and all stages, those with and those without a whoop. Of the latter (5 in all) the diagnosis was based upon the prevalence of the disease in the immediate vicinity, history of exposure, characteristic expulsive expiratory cough, vomiting, congestion of the face, edema of the lower lids and the usual absence of bronchitis. There were but 9 failures (9.3 per cent), that is, in which the method had absolutely no effect on the paroxysm at the time of the child's visit. Two failures occurred in cases without a whoop. In the remainder there never was a time when at one visit or another the author could not control the paroxysm and the oncoming whoop by pulling the jaw down and forward. In infants and young children the method seemed less efficacious, they were more easily frightened, and their crying rather increased the severity of the paroxysm or brought about another. As a control experiment after arresting the expiratory spasm, another paroxysm would be brought about by suprasternal pressure, or examination of the throat; the patient would be permitted to whoop once or twice, and then at the end of the second or third expiratory spasm, that is, just before the expected whoop, the jaw would be pulled and no whoop would occur. In the series 2 cases of epistaxis were noticed in which blood literally poured from the nose during the paroxysm; in these also the method acted well and the bleeding was controlled. A boy of 8 had a severe subconjunctival hemorrhage which increased daily; here likewise pulling the jaw down and forward stopped the paroxysms and with them the dangers of further hemorrhage.

The maneuvers are very simple; if in front of the patient place the flexed index and middle finger against the angle of the jaw, both thumbs along the side of the nose and against the upper jaw, then pull down and forwards. If behind, place the index and middle fingers as before, the thumbs along the body of the bone, the remaining fingers beneath it, and thus push down and forwards.

As a result of his experience Sobold believes the only contraindication to the use of this method is the presence of food in the mouth or esophagus. Patients treated in this manner are less likely, he says, to suffer from complications and sequelæ, than those treated only medicinally; they emerge from the disease in far better condition, less exhausted and less emaciated because vomiting has been controlled. It is advisable to try the method in other spasmodic coughs and laryngeal spasms (laryngismus stridulus, pressure of enlarged glands, influenza and glottic spasm in catarrhal laryngitis), although his experience has seemed to show that it is far less efficacious in these.

This method being directed mainly to the control of the glottic spasm does not preclude the advisability of supporting and sustaining the patient, guarding his gastrointestinal tract, establishing equilibrium in the nerve centers and affording him every possible hygienic advantage. It is particularly indicated in cases complicated with diffuse bronchitis, bronchopneumonia, convulsions, epistaxis, subconjunctival hemorrhage or sublingual ulceration, and those children who by virtue of age, the presence of rachitis, scrofula or general debility are predisposed to serious complications and sequelæ.

**False Pertussis.** R. St. Philippe<sup>1</sup> maintains that there is a form of false pertussis. The characteristics common to both are the initial catarrh and the cough. The difference consists in that in false pertussis the onset is sudden, right after the onset of catarrh, sometimes with it, and that it lasts only ten or fifteen days. It is affected by spasmodics; it occurs in epidemics of grippe. Adults are subject to it. It does not render children immune to true pertussis. It lacks the graver signs of pertussis.

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(1) Journal de Médecine de Bordeaux, April 26, 1903.

## TYPHOID FEVER.

J. P. C. Griffith and Maurice Ostheimer<sup>1</sup> call attention to the fact that a difference of opinion has existed as to the occurrence of typhoid fever during the first two years of life. They studied the subject in detail. By means of serum reaction, they have been able to determine that typhoid does occur in children under two years of age; not as commonly, however, as later in childhood and in adult life. This relative infrequency is undisputed. The authors are convinced, nevertheless, that the occurrence of the disease under 2 years of age is not as rare as had been supposed. They believe that the disease is repeatedly overlooked. The failure to recognize it exists both because the presence of typhoid is not thought of by the physician and because the diagnosis is very difficult to make.

The *Widal serum reaction occurs in infants and children* under the same conditions that it occurs in adults, according to F. S. Churchill.<sup>2</sup> It is weaker in early life. The evidence available is overwhelmingly in favor of the theory that a positive reaction means typhoid, regardless of symptoms and physical signs. The reaction is especially valuable in detecting mild or obscure cases and by ruling out certain intestinal cases which might be mistaken for typhoid. In the series reported, 127 children were subjected to the test, ranging in age from three months to four years, and among these, 23 were positive and 18 incomplete reactions.

In a paper on typhoid fever in infancy and childhood, the Editor<sup>3</sup> has given the result of a study of 200 cases, the greater part of them occurring in the Ghetto, the hot-bed of the epidemic of typhoid in Chicago in 1902.

In this series are included 9 cases in children two years and younger, the youngest being eight months old, thus refuting the statements of many writers that this disease either does *not* occur in children so young, or is of exceeding rarity. Most of these cases, however, were of a very mild type.

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(1) American Journal Medical Sciences, November, 1902.

(2) Chicago Medical Recorder, Oct. 15, 1902.

(3) I. A. Abt, Chicago Medical Recorder, Oct. 15, 1902.

In a great majority there were prodromal symptoms, though in some the onset was abrupt. In the younger children there was a rapid pulse, but the older children followed the type of adults and had a slow pulse. Relapse occurred in 10 per cent of the cases, some severe, but the majority mild. Meningeal symptoms were observed in 2 cases and perforation in 2, one of the children recovering. Intestinal hemorrhage occurred in 8 cases; broncho-pneumonia was a complication in 5 cases and lobar pneumonia in 2. The characteristic symptoms appearing most frequently were: palpable spleen in 84, roseola in 55, and the Widal reaction which was reported positive in all but 2. Thirteen cases showed heart disturbances, some being very severe. Six deaths occurred in the 200 cases, one being a child of 21 months.

In a symposium on typhoid fever in infants and children at the New York Academy of Medicine, J. Lovett Morse<sup>1</sup> called attention to the fact that abortion in women suffering from typhoid, is principally due to the high temperature and the death of the fetus. In fetal or congenital typhoid, the child is either born dead or dies soon after birth. There are now 15 cases of fetal typhoid proved by bacteriologic examination at the necropsies, and one by the serum test. The infection is general, and its septicemic nature accounts for the high mortality. Statistics of the frequency of infantile typhoid are unreliable.

J. P. C. Griffith continuing the discussion said that fetal typhoid is conveyed through the placental circulation. He believes infantile typhoid is comparatively rare. Breast fed infants are exempt. This type differs from adult typhoid in its sudden onset and shorter course, and in that the nervous symptoms overbalance the intestinal. Ambulatory cases are far more common than in adults. Intestinal ulceration is rare, vomiting is frequent, epistaxis not commonly observed. Cough with mucous râles is usual. Diarrhea is not infrequent, the spleen is always enlarged, mesenteric glands are swollen, solitary glands inflamed and show tendency to ulceration. Aphasia is more frequent than in adults.

Prognosis is good in children, and grave in infants.

A. D. Blackader in speaking of the etiology mentioned

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(1) *Boston Medical and Surgical Journal*, Vol. CXLVIII, No. 15.

that infection might be conveyed by the child's fingers, by flies and by wind-driven sand. In Tunis, where all refuse is thrown in the street, 75 per cent of the typhoid cases occur in children. L. E. Holt has seen only three cases at the Babies' Hospital in New York during the last fourteen years, and these in children over 2 years old. He believes it is rare in infants.

Lynch<sup>1</sup> made a thorough study of *placental transmission of typhoid fever*, and reaches the following conclusions:

1. That the typhoid bacillus may pass from the mother to the child *in utero*, with a resulting fatal septicemia.

2. In cases of placental transmission there are generally placental lesions of a hemorrhagic type. The child dies either *in utero* or soon after birth.

3. Placental transmission is not the rule in typhoid.

The Widal reaction is not always obtained with fetal blood, even though placental transmission be proved, and when present it cannot be determined whether the agglutinating substances result from the presence of the typhoid bacilli, or whether they have filtered through the placenta from the mother's blood. The agglutinating substance may be transmitted through the milk of a typhoid mother to the nursling. The reaction in the nursling's blood is but transient, and is always weaker than that of the mother.

Editorially the *Medical News*<sup>2</sup> comments on typhoid fever in infants. Cases under two years of age have been observed in Philadelphia and New York. All authorities are agreed that the *clinical course of typhoid in children is quite different from that in adults*. The onset is usually sudden. The affection in the very young, particularly, is characterized by nervous rather than intestinal symptoms; it may simulate meningitis in the beginning, and during the whole course the meningeal symptoms are prominent. Epistaxis is rarer than in adults, and diarrhea is less frequent. The skin eruption is likely to be much more extensive than in later years. Subcutaneous hemorrhages sometimes occur, and, if extensive, indicate a very bad prognosis.

The diagnosis is not easy. The only absolutely pathognomonic sign is the occurrence of the Widal reaction.

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(1) *International Medical Magazine*, December, 1902. (Abstract from *Johns Hopkins Hospital Bulletin*.)

(2) April 11, 1903.

The bacteriologic examination of the stools, when positive, gives very definite and valuable information. The Widal reaction may not be conclusive until the 28th day, while the feces and urine may contain typhoid bacilli and prove a source of active contagion. Even with the assistance of the Widal reaction, typhoid fever in children remains one of the most difficult diagnostic problems with which the modern pediatricist has to deal.

**Treatment.** F. X. Walls<sup>1</sup> discusses milk alone as a typhoid fever diet, under three captions: (1) The composition of milk; (2) experience with milk in allied diseases; (3) experience with and without milk in typhoid fever. *Milk is objectionable as a food in typhoid fever* because of the presence of enormous quantities of filth, manure, bacteria and toxins that are constantly present in cow's milk. The average bacteriologic analyses of milk, showed that there were 2,600,000 bacteria to the c.c. Walls shows from charts that two patients improved as to their temperature, pulse and general condition when milk was withdrawn from their food. In this way, intestinal putrefaction was lessened. He suggests that the patients should be fed gruels well cooked and seasoned, which may be made from oatmeal, barley, arrowroot and other cereals; meat broth, meat juice, white of egg added to water; soup, fruit juices such as orange, grape, lemon, pineapple; kumyss, buttermilk or other nutritious milk foods, and cream and milk cautiously. He concludes by saying that the list is merely suggestive, and may be changed as the needs of the individual require. Do not overfeed, he says, watch the abdomen for gaseous distention of the bowels, and the stools for evidences of indigestion. If these conditions exist, correct the diet, rather than administer antiseptic or antifermentative remedies.

The Editor<sup>2</sup> reports the general method, and the results obtained in the treatment of 90 cases of typhoid fever which came under his care. The treatment he employed is the same as is in vogue everywhere. It may be divided as follows: (1) hygienic; (2) dietetic; (3) hydrotherapeutic; (4) expectant and symptomatic. A large portion of the cases ran the entire course of the disease without

(1) Chicago Medical Recorder, October, 1902.

(2) Medical News, Nov. 1, 1902.

receiving any drugs. Patients were kept in bed and as quiet as possible, although they were encouraged to change their position in bed frequently. This enforced rest in bed could not be strictly adhered to in young children. It was necessary to pick them up on account of restlessness and for their baths, or to change their napkins. The mouths were kept scrupulously clean by washing with boric acid solution. The usual precautions were practiced for the prevention of bed-sores.

Only a few visitors were allowed in the ward at a time, and if a number of patients were ill, visiting was abolished. During the febrile period the patients were kept on a liquid diet, consisting almost exclusively of milk, except in those rare cases where milk could not be borne. After the temperature had fallen to normal, strained gruels, broths and fruit juices were permitted. The patients were all encouraged to drink large quantities of water. No solid food was allowed until the tenth day of normal temperature.

The treatment of the fever was carried out on the hydrotherapeutic plan. His experience soon taught the Editor that children bore cool baths badly—that is to say, baths in which the water was reduced to a temperature as low as 70° or 75° F. The children who were thus bathed, lived in constant terror of the succeeding bath. They were nervous and unhappy. Consequently, they were restless; the pulse and respirations were accelerated. Not only this, but those patients who were given cool baths frequently, reacted badly. They were literally forced into the water and retained there against their will; not a few of them chilled; many were somewhat cyanotic and excited after being replaced in bed.

As is the custom generally, the little patients were bathed for a temperature of 103° F. They were carried from the ward into the adjoining bathroom and were placed in the tub, with water at a temperature of from 88° to 90° F.

The bath was arranged with a hammock suspended over the tub, so that when the child was introduced into the bath it reclined comfortably in the hammock. It was found that in nearly every case, if the child was allowed to remain in the tub for five minutes in water at 90° F., the bodily temperature was reduced two degrees, and the

pulse and respiration fell a corresponding number of points. The children were continually rubbed while they were in the baths; they experienced no chills, no discomfort; they enjoyed them and looked forward to them. In those cases where the fall of temperature was unsatisfactory, or where the fever was unusually high, it was found that by leaving the children in the bath for ten or twelve minutes a greater reduction of temperature could be obtained. It was noted as a point of interest that the bath-water was usually raised two degrees; that is to say, water that was 90° when a child was placed in it, was raised to 92° F. before the bath was finished.

No antipyretic drugs were employed to reduce the temperature in any case. In those cases showing nervousness or restlessness, an ice-bag applied to the head sometimes gave relief. At times a small dose of Dover's powder or sodium bromid was given for restlessness and sleeplessness.

Constipation was treated by enemata, and cases of severe diarrhea were given small doses of deodorized tincture of opium. In the prolonged cases which showed the exhausting effects of the disease, where the pulse was rapid and weak, whiskey or brandy was employed, and moderate doses of strychnin were given. A child 10 years of age was given 1-100 grain three or four times a day. A child 3 years of age was given 1-200 grain of strychnin three or four times a day. Intestinal antiseptics were rarely employed.

It is unnecessary to go further into detail concerning the various complications and conditions which arose and required special attention. Such complications and conditions were treated as they arose, on a rational plan. At the close of the febrile period, patients were frequently given a tonic, in a routine way, the favorite being the elixir of iron, quinin and strychnin.

**Complication.** The cases of two brothers and a sister who were admitted to the University Hospital, suffering from typhoid fever, are reported by Sailer.<sup>1</sup> The sister and one brother had diphtheria the previous summer and developed necrosis of the jaw, followed in the brother's case by typical cancrum oris. Diphtheria bacilli were found in the necrotic areas in both cases.

Noma is an exceedingly rare complication of typhoid

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(1) American Journal Medical Sciences.

fever. Keen states that in 1,700 cases with surgical complications which he analyzed, noma was recorded nine times.

The first article in which attention was called to the possibility that noma, in some cases at least, is due to the diphtheria bacillus, was that of Freymuth and Petruchky. The writer believes that these two cases confirm the opinion that in all cases of sore throat an examination for diphtheria bacilli should be made, and if found a prophylactic injection of diphtheria antitoxin should be given; also, that one of the causes of noma is the diphtheria bacillus.

## DISEASES OF THE RESPIRATORY SYSTEM.

**Ozena.** One-tenth of the cases of ozena treated by A. Riviere<sup>1</sup> occurred in infants under one year; therefore he holds that the affection is of more frequent occurrence in early life than is generally supposed; and that in many cases diagnosed as chronic coryza and infectious purulent or impetigenous rhinitis, careful examination would show the characteristic atrophy of the turbinates and nasal mucosa, wide nasal fossæ, crusts and malodor of ozena. Under appropriate treatment he has not only seen the local trouble subside, but complicating gastrointestinal disturbances disappear, marked improvement in the general health ensuing. Riviere treats such cases by daily irrigation of the nasal cavities with salt or boric acid solution, using in preference a soft urethral catheter connected with the delivery tube of a vessel suspended not more than 0.15 to 0.20 meter above the child's head.

**Primary Gangrenous Angina.** E. Oberwarth<sup>2</sup> reports a fatal case in a boy twelve years old. There are only 22 cases of this affection reported. The tonsils present grayish-black or black spots, with sharp yellowish margins, with deep ulcerations. *Fetor ex ore* is characteristic; nasal voice; swelling of cervical glands; no fever; digestion and appetite wanting.

The etiology is obscure. It is more frequent in adults. Asthenia attended with psychical depression; venous stasis

(1) Journal de Médecine de Paris, Feb. 15, 1903.

(2) Deutsche medicinische Wochenschrift, April 23, 1903.

in abdominal organs; edema of the glottis; pains in the extremities, and hemorrhages are the complications. The duration of the disease is from two to three weeks.

**Retropharyngeal Abscess.** There are two classes of retropharyngeal abscess in infancy, so J. L. Morse<sup>1</sup> states—primary, or idiopathic, and secondary. The lymph nodes which form a chain on either side of the pharynx may enlarge, which is called adenitis. Suppuration of one of these enlarged nodes constitutes primary retropharyngeal abscess. Neither the adenitis nor the abscess is often truly primary, as they result from inflammation of some of the cavities drained by these nodes. When suppuration occurs, it usually develops in from five to six days.

The symptoms, which are very similar to nasopharyngeal catarrh, are preceded by retropharyngeal adenitis. With suppuration the temperature usually rises, there is unwillingness to take food, difficulty in swallowing, modification of the voice, and respiration becomes difficult. These symptoms vary according to the location of the abscess. In acute cases the head is held in a characteristic position, the neck being extended and the head turned to one side.

The symptoms are frequently misinterpreted and the disturbance may be attributed to simple pharyngitis, rhinitis, diphtheritic paralysis, catarrhal or diphtheritic laryngitis. Sometimes, too, the case is diagnosed as bronchitis or broncho-pneumonia. Retropharyngeal abscess is overlooked because it is not thought of, and palpation of the throat is often omitted. The swelling is usually situated in the side of the pharynx, but may be at any level; it is either tense and elastic, or fluctuating. The tongue depressor should be used, and not the gag, as the pressure of the latter has caused sudden death in one of Snow's recent cases, and in one of Holt's cases asphyxia resulted. A sudden attack of dyspnea may mark the development of an abscess.

The untreated cases usually terminate in death. An abscess seldom opens spontaneously, and if it does, death may result from various causes. Cases properly treated, that is, by incision, show a low mortality—5 per cent.

Abortive treatment does not offer much hope because of the late recognition. When the adenitis develops, hot

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(1) Journal American Medical Association, Jan. 31, 1903.

applications should be made to hasten the almost inevitable suppuration, and then the abscess should be opened as soon as there are evidences of this. Drainage may be managed better in the external incisions, but the favorable results following internal incision make this rather unimportant. Moreover, the latter may be done by any physician, while the former requires a skillful surgeon with competent assistants. The infant should be in an upright position, the head being tipped forward as soon as the incision is made to prevent the pus from entering the air passages. The mouth should be held open with the finger or a tongue depressor. Repeated incisions are sometimes necessary, and the mouth should be frequently washed with an antiseptic solution.

C. G. Kerley cited a case where he made considerable pressure on an abscess and asphyxia resulted. This child was resuscitated. He has seen another case with double abscess.

F. E. Fronczak related a case of sudden death when he inserted his finger and pressed on a retropharyngeal abscess. He believes that the baby's head should be held down when the incision is made.

In the discussion which ensued the Editor reported a case seen in Cook County Hospital in which palpation with the finger revealed a mass as large as a hickory nut to one side of the median line. The child showed symptoms of retropharyngeal abscess, and, although several incisions were made, no pus was discharged, and the case appeared to be one of non-suppurating retropharyngeal adenitis.

**Congenital Inspiratory Stridor.** Five cases have within the last three years been brought to the Boston Children's Hospital, and D. C. Greene<sup>1</sup> reports a typical one. All had a folding in of the epiglottis backward, forming a sort of tube with a slit behind. The lesion he locates in the upper part of the pharynx. In two cases in which the stridor has been outgrown there is still a marked inrolling of the lateral margin. The essential symptom is a modification of the respiratory sound during inspiration, characterized by a musical note, which has been likened to the crowing of a chicken, or, in mild cases, to the purring of a cat. It is always noted immediately after birth or within

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(1) Boston Medical and Surgical Journal, June 11, 1903.

a few days, although it may be overlooked at first. It is continuous during waking and sleeping, and is aggravated by excitement. The voice is not affected. Expiration is usually quiet, but when the symptom is intense it may also be heard during expiration. It does not seem to produce distress, but temporary cyanosis sometimes occurs during the height of the stridor. The obstruction, while not affecting the general health under favorable conditions, seems to render the child rather more susceptible to pulmonary affections. It usually increases up to the third or fourth month, and remains the same until the child is about one year old. It then gradually disappears, finally only appearing during excitement and then disappearing altogether. The prognosis is good. One case of death, however, due to laryngeal obstruction, simply from this cause, has been reported. The treatment consists in guarding the infants from respiratory trouble, and keeping them properly nourished in order to resist the better. Intubation of the trachea may be required in very rare cases, but in the majority there is no call for operative intervention.

**Pneumonia.** M. Pfaundler<sup>1</sup> calls attention to the *disappearance of the patellar reflex* as an undescribed sign of genuine croupous pneumonia in children. The condition of the patellar reflex was examined in 200 children suffering from croupous pneumonia. In 55, or 27 per cent of the cases, it was diminished or absent. In normal children Eulenburg found it absent in 4.7 per cent; Bloch, in .72 per cent; and Pelizaeus, who examined 2,403 cases, found it absent only once.

The following conclusions are drawn from the study of these cases: In genuine croupous pneumonia of children, the patellar reflex is frequently absent or diminished, often before the appearance of local signs. This sign is more frequent than the characteristic herpes labialis, and may be of differential importance, for example, in distinguishing pneumonia from an incipient meningitis.

A case of *lobar pneumonia followed by acute pemphigus* in a child 2½ years old is reported by Oskar Moos.<sup>2</sup> Eight days after the onset, small vesicles began to appear on the breasts, and, later, on the back, while the patient's condi-

(1) Muenchener klinische Wochenschrift, July 22, 1902.

(2) Muenchener medicinische Wochenschrift, Nov. 11, 1902.

tion became more serious. The vesicles continued to involve larger areas and become more confluent, so that the epidermis became entirely removed from the lower part of the back. The child made a complete recovery.

A case of *general pneumonic infection* in a child is recorded by H. R. D. Spitta.<sup>1</sup> This case is an example of pneumococcus septicemia. It occurred in a child 17 months old, who was admitted with a lobar pneumonia and with a tender, slightly reddened left elbow joint. On the second day a few c.c. of pus were aspirated from the right pleural cavity, and the diplococcus pneumoniae found. Later the left elbow joint, the blood and the cerebro-spinal fluid were examined, and the diplococcus found. The patient died seven weeks after admission. No necropsy was permitted.

**Management of Catarrhal Pneumonia in Infants.** C. G. Kerley<sup>2</sup> read a paper on the treatment of catarrhal pneumonia, before the section of diseases of children of the American Medical Association, at the last meeting. The paper is of great interest because it emphasizes the important details in the management of these cases.

"Catarrhal pneumonia," he says, "demands the best attention we can give it, not only on account of the delicate organ attacked, but because it is unlike many of the other acute infectious diseases, in that it has no self-limited course and no cycle. Every child at the commencement of illness has a definite resistance, with which to withstand the disease. In catarrhal pneumonia our effort should be directed to preserve every strength unit which the child possesses. An immense amount of vitality is wasted in sick children, because of irritability, restlessness and loss of sleep."

The author thinks that it is not the first duty of the physician to give this or that drug or to use a certain local application, but to make the child comfortable and to put it in the best position to withstand the disease. He would establish a sickroom régime which will make this possible.

A constant supply of fresh air is of great importance. There should be direct communication with out of doors in every case.

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(1) British Medical Journal, Nov. 15, 1902.

(2) Journal American Medical Association, June 20, 1903.

The author advises that the room be ventilated by placing a board under the lower sash. The board should be four inches wide. In this manner a fresh current of air is admitted to the room. The temperature of the room should be about 70° Fahrenheit. Kerley thinks the patients are overclothed. A medium weight flannel shirt, the band, and usual night dress are sufficient. He has discarded the oil-silk jacket, as he believes it overheats the patient.

In all these cases the digestive capacity is reduced. A gastrointestinal infection is possible in any of these cases. In breast-fed children it is well to order a drink of water before the child is nursed and to give water between the nursings. The time for each nursing should be reduced from one-third to one-half of that which is permitted in health. In bottle-fed babies the strength of the milk should be reduced from one-third to one-half by dilution with water. Older children should be put on a diet of diluted milk, gruel and broth.

The child should be disturbed as little as possible; by disturbing the child every hour or two in the twenty-four, its strength can be very soon exhausted.

Kerley has great confidence in the use of steam inhalation, which contains creosote. He has his patient placed in its crib, the latter covered with sheets; steam is generated from an ordinary croup kettle, and the steaming is carried on for thirty minutes every three hours. The sheets should be parted about every ten minutes so as to allow a renewal of the air.

He also finds much good from counter-irritation. In order that counter-irritation be of service, a distinct redness must be produced on the skin. Turpentine diluted with olive oil, or mustard plasters applied to the chest have given him good service. Ordinarily two or three mustard plasters in the twenty-four hours are sufficient; only in the very severe cases does he use the plaster as often as once in six hours.

In cases of sudden onset with high fever, rapid breathing, and cold extremities, a mustard bath is employed, which is made by adding one tablespoonful of mustard to six gallons of water, 100° Fahrenheit.

The author next considers the drug treatment of catar-

rhral pneumonia. He points out that the digestive function is very easily put out of order and, under these circumstances, the child is improperly nourished and the ability to resist disease is lessened. He does not believe in the use of the heavy syrups, which contain expectorants or ammonia salts. He considers that tablets, containing 1-100 of a grain of tartar emetic and 1-40 of a grain of ipecac, may be used as an expectorant. For persistent and irritating cough he recommends one-fourth grain of Dover's powder. Of the heart stimulants he has to say that ordinarily they are used too early. A heart stimulant should never be given because the child has pneumonia or diphtheria, or scarlet fever, but it should be given when the heart needs assistance. To be more definite, he says, that a heart which is beating at the rate of 150 during quiet or sleep, and is not strengthened by sponging or packs, needs assistance. Strychnia and strophanthus are the drugs which he commonly uses. For a child one year of age one drop of strophanthus in water, or 1-300 grain of strychnin may be given every three hours. The strychnin may be cautiously increased to 1-100 of a grain, if the case is carefully watched. He rarely employs digitalis, because he thinks it disturbs digestion.

The routine use of alcohol is not advised. He believes that its prolonged use greatly upsets the stomach. When he employs it, he does so late in the disease and gives it in large amounts and he thinks it has been a means of carrying a patient through safely. One-half to one dram of whiskey or brandy well diluted may be given every one or two hours, to a child one year of age. Nitroglycerin may be given in 1-100 grain doses every three hours to a child one year of age. It is indicated in cases where there is marked cyanosis with cold extremities. This drug should not be used continuously.

A sponge bath for cleansing purposes, 95° Fahrenheit, may be given daily. To reduce the temperature Kerley advises, first, sponging the child in water, which, to begin with has a temperature of 95° F. and is gradually reduced to 70° or 75° F. If the temperature is not readily controlled in this way, he sometimes employs the tub bath, though he has found it unsatisfactory on account of the exposure, friction, and necessary shortness of the bath. He

believes that the best means at our command for controlling high fever in these cases, is the use of the cold-pack, which he thinks may be employed without the slightest danger. A large towel, moistened in water at 95° Fahrenheit, covers the child from the neck to the middle of the thigh. In two or three minutes this towel is removed and another one moistened in water at 85° is placed upon the child. As a rule it is not advisable to use water with a temperature lower than 80° F., though in those cases where the temperature is unyielding and remains constantly at 105°, the temperature of the pack may be reduced to 70° or even 60°. The wet towel should be changed every three hours and a fresh one supplied. An ice bag should be kept at the head and if the extremities are cold artificial heat should be supplied by water bags. Oxygen, he thinks, has definite value in those children that have restricted breathing space.

**Empyema.** Empyema in infants and children is discussed by Henry Koplik.<sup>1</sup> Purulent effusions in infants are very common. In 120 cases coming under Koplik's observation, 104 occurred in children under 5, 16 between the fifth and the tenth years.

In 69 per cent of the author's cases the empyema followed a pneumonia, the pneumococcus being found in the exudate. In 15 per cent the streptococcus was found; in 9 per cent the staphylococcus; and in 7 per cent the tubercle bacillus. Thus the tuberculous form of empyema is rare in children. Empyema may complicate any acute infection; exposure to damp and cold predisposes to an attack.

The exudate normally has the gross characteristics of ordinary pus, but it may be at first a clear serum, subsequently becoming purulent. In rare cases the exudate is hemorrhagic.

In cases which follow pneumonia the temperature may be normal for a few days, followed by a daily recurrence of fever and signs of effusion in the chest. The temperature, pulse and respiration may never recede to normal; the signs in the chest, instead of clearing up, become more marked, and after 12 to 14 days, puncture reveals fluid. The empyema may have its onset with the pneumonia and

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(1) Medical News, Sept. 13, 1902.

very early reveal signs of effusion, or may occur insidiously after the pneumonia has run its course. Symptoms, as a slight hacking cough, steady emaciation, pallor, loss of appetite, exhausting night sweats, intermittent range of temperature with a persistent increased number of respirations, direct attention to the chest.

In infants the chest may be full of fluid and still the voice and breath sounds be normal or only slightly diminished in intensity. Bronchophony and bronchial breathing with pleuritic râles may be heard over the seat of the effusion. The percussion note is flat posteriorly and there is a marked resistance offered to the finger. Displacement of the apex of the heart and of the liver are of confirmatory value. Other signs are drawing in of the intercostal spaces during inspiration, immobility of the affected area and bulging.

No *diagnosis* is complete without exploratory puncture. One or two punctures should be made at each sitting.

The *prognosis* in the meta-pneumonic forms is good. In 120 cases of all kinds operated, 20 died. The prognosis of the tubercular form depends upon the age of the patient and extent of the lung involvement.

A paper on empyema in children, by F. J. Cotton,<sup>1</sup> is based on a study of 180 cases; 45 were treated by the writer and 86 verified as to the result; 51 per cent were under 4 and 48 per cent over 5 years of age; the average age was 4.9 years.

The great majority of cases, according to Cotton, follow lobar pneumonia. One hundred and four of 119 cases examined showed an antecedent pneumonia. Thirty-three of 48 cases showed pneumococci in pure culture. Tuberculosis seems to play a very slight rôle in the causation.

The usual type is that of a total empyema; the percussion note is flat from the third rib in front, from the scapular spine behind, and the heart is considerably displaced. The amount of effusion tolerated by children without obvious discomfort is relatively much larger than in adults.

The operation should not be delayed. Spontaneous cure, even when aided by tapping, is rare. The best operation, in general, is the subperiosteal resection of 1 inch of the

(1) Boston Medical and Surgical Journal, July 17, 1902.

eighth or ninth rib in the axillary line, the evacuation of the pus and tube drainage. Irrigation at or after operation is usually not advisable. When failure to heal seems to depend on failure of the lung to expand, treatment by valve or suction apparatus is indicated. The author's apparatus consists of a hydrostatic appliance to regulate and estimate negative pressure—the chest cavity being connected by an air-tight joint with the air reservoir of the apparatus; and of a form of valve dressing.

The mortality is about one in seven; the closure of the cavity depends upon good nutrition and adequate drainage. Recurrences may occur from faulty drainage at any time. Deformity of the chest is usually temporary and yields to treatment. Long-continued discharge is not infrequently followed by permanent deformity.

The *surgical treatment of empyema* is discussed by Charles Dowd.<sup>1</sup> Seventy-three of the patients who form the basis of his report were between 2 and 15 years of age; 2 were adults.

The cases are classified as follows for the purpose of description: 1. Simple empyema; recovery in three months or less. 2. Protracted empyema; recovery delayed more than three months. 3. Fatal cases.

Summary of treatment:

(1) For simple cases of empyema, the following treatment is used: Excision of about  $1\frac{1}{2}$  inches of the seventh or eighth rib in the posterior axillary line; light ether anesthesia is usually employed; short rubber tubing cut partly across, doubled and held by large safety pins, is used for drainage; abundant gauze dressings are applied and changed when saturated.

(2) If general anesthesia is contraindicated, an incision into the chest may be made between two ribs under cocain.

(3) Aspiration is used to give temporary relief only.

(4) The patients are allowed out of bed as soon as practicable, and the expansion of the lungs is encouraged by forced expiration.

(5) Irrigation is used only when there is foul-smelling discharge from necrotic lung tissue.

(6) Secondary operations are not done until good

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(1) Medical News, Sept. 13, 1902.

opportunity has been given for healing—usually three or four months after the primary operation, and if there has been no noticeable improvement for about a month.

(7) In the secondary operation the expansion of the lung should be encouraged by incising, stripping back, and if necessary removing portions of the thickened pulmonary pleura.

(8) The examination of 44 of the patients at long periods after the operation indicated that recovery is usually complete in simple cases, and that there is surprisingly little deformity in most of the severe cases.

**Hydrotherapy in Affections of the Respiratory Organs.** According to S. Behrman,<sup>1</sup> in the acute stage of primary or secondary pneumonia, when a cold bath is impracticable, moist applications, cold or warm, are of value. Warm or hot applications are indicated when with grave physical findings the temperature is normal or subnormal. The greater the discrepancy between the two, and the longer it has lasted, the higher should be the temperature of the water. In asthenic pneumonia, with a grave prognosis and subnormal temperature, warm applications serve in good stead. Hot water applications are also of service in tubercular adenitis, in tubercular inflammation of the connective tissue of the skin without any abscess formation, in recurrent tonsillitis, and in tubercular affections of the lids.

**Tuberculosis.** Martin Hohlfeld<sup>2</sup> calls attention to the frequency of tuberculosis in infancy. He points out that in 921 postmortems on infants, 55 showed tubercular lesions, and of these 44 showed pulmonary involvement. In all of these cases the bronchial lymph glands were affected. The author cites two cases, one in an infant 7 months old and another 10 months old, which, after a protracted illness, came to postmortem and showed extensive tubercular changes in the lungs which had advanced to cavity formation.

The evidence at hand shows that in infants as in adults the lesions begin most often in the apices. In one case profuse pulmonary hemorrhage occurred. This is very rare in infancy.

**Pulmonary Gangrene.** A case of gangrene in an infant

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(1) *Klinische therapeutische Wochenschrift*, April 12, 1903.

(2) *Muenchener medicinische Wochenschrift*.

1 year old is reported by W. L. Carr.<sup>1</sup> The child was under observation for one month. The physical examination showed diminished expansion of the right lung with high-pitched respiratory sounds and a few mucous râles. Examining the lung posteriorly, vocal fremitus was increased, and dullness extended from the spine of the scapula to the base of the lung. Intensified voice sounds, prolonged expiration and a few fine crepitations were heard at the base. The baby had a constant though somewhat irregular temperature. At no time during the illness was there any fetid odor of the breath, neither was the expectoration fetid. The sputum was not blood-streaked or discolored. The baby coughed up more than is usual for one of its age. Necropsy showed that the entire lower lobe of the left lung was almost solid with broncho-pneumonia, and contained in its posterior half a gangrenous area extending within  $\frac{1}{2}$  inch of the pleural surface. There was also a small area of gangrene in the upper lobe. The right lower lobe showed acute broncho-pneumonia with a gangrenous area about one-half the size of that on the left.

## DISEASES OF THE CIRCULATORY SYSTEM.

Lees<sup>2</sup> urges the *necessity of frequent and searching examination of the heart* of the child. First make an inspection of the chest wall, palpate then percuss, using the least touch with the fingers alone. The strength of the cardiac impulse, either localized or diffuse, will tell the condition of the left ventricle. Percussion will reveal the size of the right auricle and left ventricle. The third space ought to be resonant quite up to the sternum, and in the fifth space the hepatic dullness alters the note, but in the fourth the dullness of the right auricle is present less than one finger-breadth in a child.

Congenital murmurs in the child should be watched for. The most frequent is a loud systolic murmur which is loudest at or just below the junction of the left fourth costal cartilage with the sternum. It is probably due to

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(1) Archives of Pediatrics, March, 1902.

(2) Pacific Medical Journal. (Abst. in Med. Review of Reviews, Aug. 25, 1902.)

an incomplete septum. The next most common perhaps is a systolic murmur over the pulmonary artery. This indicates a congenital obstruction of the pulmonary artery.

In acute and subacute rheumatism an enlargement of the left ventricle is the first indication of cardiac involvement, and may be detected when there is no evidence of endocarditis or pericarditis. In children the cardiac manifestations of rheumatic fever may be more pronounced than the arthritic. In the rheumatic heart there is usually present a systolic apex murmur and frequently a presystolic or midsystolic murmur.

In chorea, enlargement of the left ventricle is frequent. In pneumonia the right side of the heart is distended, the auricle more so than the ventricle. During and after an attack of diphtheria the cardiac dulness may extend to the left of the nipple line; if it extends two finger-breadths to the left of this line, there is great danger to life. A rapid increase in the dilatation may occur even six or seven weeks after the diphtheritic attack. Influenza may also cause rapid dilatation. In typhoid there is enlargement of the left ventricle which gradually appears as the disease progresses.

[A careful cardiac examination should be made during the attack as well as during the period of convalescence of all children suffering with the acute infectious diseases. Pneumonia, diphtheria, scarlatina, influenza, typhoid fever and many more of the acute infections are associated with or complicated by endo- and pericardial inflammations or myocardial degenerations. It is important that these be recognized early, and if they occur, a prolonged rest in bed with other appropriate treatment should be instituted. It is the consensus of opinion that much can be done in many of these cases toward preventing serious cardiac involvement by early recognition and treatment of these cases.—Ed.]

Three rare cases of heart disease in children are reported by Hochsinger.<sup>1</sup> One was a greatly hypertrophied heart in a boy of 9, following articular rheumatism. Tubercular pleurisy and tubercular mediastino-pericarditis were present at necropsy. The pericardium was adherent to the thorax. There were also mitral and aortic insufficiency,

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(1) *Jahrbuch für Kinderheilkunde*, January, 1902

and the heart was drawn to the left side. The second case was a boy of 13 with congenital hypertrophy, patent ductus Botalli, which showed aneurismal dilatation, as did the pulmonary artery also. The isthmus of the aorta was stenotic near the origin of the left subclavian.

The third case occurred in an infant 11 months old, a "blue" baby at birth, without a complete septum of the truncus arteriosus communis. Transposition of the origin of the aorta was noted, as was also a rudimentary development of the beginning of the aorta. There was dilatation of the pulmonary artery and the ductus Botalli was patent.

Lee Bernd<sup>1</sup> reported a case of *double mitral disease of congenital origin* before the Philadelphia Pediatric Society. The occurrence of severe rheumatism in the course of the pregnancy, the absence of organic rheumatism in the child and the fact that cyanosis and delicate health had been present since birth, led to the diagnosis of a congenital heart lesion.

J. C. Griffith believed the case to be of prenatal origin in spite of a hypertrophied right heart. He said that in congenital heart disease there is usually an absence of great cardiac hypertrophy and dilatation. An accentuated second heart tone does not necessarily indicate mitral disease, as it also occurs in pulmonary stenosis or in patulous ductus arteriosus as well as in cases of perforate septum.

**Congenital Aortic Stenosis.** F. N. Gordon<sup>2</sup> reports the case of a child that was normal until 4 months old. A first attack of enteritis, soon followed by another, was accompanied with some cyanosis. Later there were signs of rachitis and systolic murmur heard all over the chest; then high temperature, cyanosis, death.

Postmortem examination revealed enormous hypertrophy of left ventricle, which extended to and formed the apex. The interventricular septum was hypertrophied. There was marked thickening of the aortic valves and stenosis in a marked degree. The mitral valve was hypertrophied. There was a small opening in the interauricular septum. The intestines showed ulceration of Peyer's patches.

**Blood Pressure Determinations as a Guide to Stimulation.** Appreciating the difficulty of regulating the stimu-

(1) Pediatrics, January, 1903.

(2) Courier of Medicine, May, 1903.

lation of infants and young children by any of the signs ordinarily observed, such as pulse rate and temperature, or the general condition of the patient, H. W. Cook<sup>1</sup> resorted to routine blood pressure determinations in the hope of obtaining a more accurate and trustworthy criterion for the choice and administration of stimulants. In order to estimate the maximum arterial blood pressure, Cook uses an instrument which is a modification of Cushing's sphygmomanometer. By means of this, continuous and equal pressure can be transmitted from a rubber bulb held by the operator to a band placed around the arm or leg of the patient. This is connected with a manometer, which registers the pressure in millimeters. A valvular arrangement in the bulb permits of a gradual increase in pressure throughout the air system, the principle of the apparatus raising simultaneously the column of mercury and constricting the band. By keeping a finger on the vessel distal to the constriction, the operator can read off the height of the mercury at the moment the pulse is lost. The error in transmission through the arm tissues is not more than 3 mm. in children and 10 to 15 mm. in adults. In adjusting the band, care should be taken that it is as near midway on the upper arm as is possible. The pressure should not be kept up any longer than necessary to obtain a reading, although no injurious effects have followed longer observations. The pulse rate is noted with each pressure reading. The minimum blood pressure is about three-fourths of the maximum.

Pressure determinations were made on a number of normal children and on convalescents in order to obtain a normal standard for different ages. This standard varies with the patient's height, weight and size of the arm, wherefore each case must in great part be judged on its own merits. We should aim to maintain that blood pressure which is taken when the child is at its best. Blood pressure determinations are a guide for the intelligent regulation of the use of a stimulant; the necessity for its use or omission; the size of the dose and the time and frequency of administration.

The author has observed that during the first few months the pressure averages about 70 to 75 mm.; during the

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(1) *American Journal Medical Sciences*, March, 1903.

second six months 80 to 85 mm. Lower than 60 mm. is rare except when stimulation is urgent. During the second year of life the pressure averages about 80 to 90 mm.; in the third year, 90 to 100 mm. It does not often go over 110 mm. Healthy children between the ages of 3 and 10, lying at rest, have a blood pressure varying between 95 and 115 mm. A pressure of 85 mm. at this time of life could be considered moderately low, 75 mm. low, and 65 mm. very low. The average daily pressure does not vary more than 5 mm. The taking of nourishment, a crying spell or restlessness, or any manifestation of excitement, will often be accompanied by a rise of from 5 to 10 mm. The pressure chart followed for several days, and filled in every few hours in the case of a very sick child, sometimes makes certain more or less definite curves corresponding to periods of depression and periods of improvement. From 3 to 4 A. M. until 6 or 7 A. M. there may be a fall. The pressure rises again toward evening, the time of highest pressure being from 4 to 7 P. M. This corresponds to other well-known clinical phenomena.

Observations were made on cases receiving stimulation in order to ascertain the effect the stimulant was having on the blood pressure. Alcohol, strychnin and digitalin were the drugs used. The alcohol was given by mouth, occasionally per rectum, in the form of brandy or whiskey well diluted. The strychnin and digitalin were given hypodermatically in doses of 1-400 grain for infants over 1 month and under 14 to 16 months; but 1-200 grain is not excessive, in fact it is sometimes necessary, especially in serious cases when immediate stimulation is required. One two-hundredth grain should always be given to older children up to 2 years. The response to strychnin usually was indicated by a rise in pressure occurring in from five to ten minutes, and varying from 10 to 30 mm. The duration of the rise was dependent upon the physical condition of the child; six to eight hours being the usual time for the appearance of the reaction. No rise at all, or a rise maintained for but a few minutes, was in a number of instances followed by death in less than twenty-four hours.

Digitalin seemed to have a more immediate action than strychnin; the rise in blood pressure is greater, but is not maintained for so long a time. The effect is apparent in

about fifteen minutes, and may go as high as 40 mm.; it lasts from one to three hours. The effects of alcohol were not uniform. Sometimes a slight rise followed quickly, at other times none was noted. In a few instances there was a slight fall. The best effects from alcohol are obtained from oft-repeated doses. When there is demand for a moderate stimulant, alcohol is best. It should be given, according to the age of the infant, in doses of from 5 to 30 drops, well diluted and repeated as often as necessary. It is the best stimulant in the slow toxic and marantic diseases, and if care is taken to avoid overstimulation or upsetting the stomach, a child can scarcely be given too much. Cases that cannot take alcohol, or that need a more active stimulant, should be given strychnin in doses of from 1-400 to 1-200 grain, repeated only so often as is absolutely necessary. If the heart becomes irregular or very rapid, digitalin in small doses may be added. Occasionally, when the blood pressure is persistently low, digitalin may raise it when strychnin fails.

Alcohol may be given until the first evidence of overstimulation, a high blood pressure, is manifested. Strychnin and digitalin should be conserved so as to give the least amount consistent with the required degree of stimulation. In sudden turns for the worse, such as collapse, prostration, etc., digitalin is the choice followed by strychnin. This will sometimes revive an infant apparently on the verge of dissolution. The strychnin maintains the bettered condition and the rise in pressure longer than digitalin alone; or both may be given at the same time. A very brief rise or no rise at all after several doses of digitalin and strychnin justifies a very bad prognosis. It is often the first indication of imminent dissolution.

Digitalin and strychnin are indicated in cases of rapid irregular pulse in spite of the fact that the blood pressure may be high; as, for instance, in delirium cordis. Digitalin steadies the heart without raising the blood pressure, thus acting as a conserver of energy. The action of the digitalin may be likened to the stimulant effect of a cold sponge in marantic conditions and its sedative effect in the delirium of typhoid.

Atropin is beneficial in some cases, especially when there is respiratory distress. Infusions of normal salt solution

are apparently void of any action on the blood pressure. In a few cases there is a slight fall, although many cases are benefited by the salt solution, either by increased elimination or by supplying the tissues with fluid that cannot be obtained in any other way. Normal salt solution is not a stimulant, however. In cases of collapse, with marked cyanosis, a hot mustard bath is beneficial and worth trying. Rubbing with hot whiskey or brandy and the use of hot water bags is indicated when the peripheral circulation is poor.

In hospitals and in private practice where a trained nurse is employed, a pressure chart should be kept as a routine, just as we keep a chart of the pulse, respiration and temperature. It enables the physician to give exact directions as to the dosage and frequency of administration, the kind of stimulant and the indications for a change in stimulants. The blood pressure as an indicator as to the condition of the patient is superior to either pulse or general aspect of the patient. It is a correct guide in treatment. In case of necessity the pressure reading can be made by some member of the family. Pressure observations should not, however, take the place of other signs or symptoms, but should serve merely as a correct means for estimating arterial tension; they are the best single guide to the intelligent administration of stimulants.

## DISEASES OF THE BLOOD.

**Leucocyte Count.** A large number of cases of summer diarrhea were studied by J. H. M. Knox and L. M. Warfield<sup>1</sup> for the purpose of determining the relation of the number of the leucocytes to the infection. They found that leucocytosis in cases of this nature is no index of the severity of the attacks. In summer diarrheas the leucocytes are similarly increased in the ulcerated inflammation of the intestine and in acute autointoxication, and their simple enumeration affords little aid to diagnosis. Of more value than the number of the white cells is their differential count. The authors' investigations seem to show that the more severe the infection, the greater the

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(1) Johns Hopkins Hospital Bulletin, July, 1902.

proportion of polymorphonuclear leucocytes to the mononuclear. The article is classical, and the conclusions that the authors draw are as follows:

1. A differential count of leucocytes in the blood of well children under 2 years of age, when compared with the blood of adults, shows that there is a relative increase in the small mononuclear elements, and a decrease in the number of polymorphonuclear cells.

2. In the summer diarrheas of infants, the number of leucocytes in the blood is usually increased, but the count of the white cells varies within such wide limits, even in the milder forms of the affection, that a high or low leucocytosis cannot be regarded as of diagnostic value.

3. In simple dyspepsias of childhood a differential count of the leucocytes does not show any marked variation from that of a healthy infant, but as the cases become more severe there is apparently a progressive increase in the polymorphonuclear neutrophile cells and a decrease of the small mononuclear variety, being thus more like adult blood.

4. As pointed out by Japha, the polymorphonuclear leucocytosis is an indication of an intoxication with decomposition products in the intestine, or of the toxins of pathologic bacteria, *i. e.*, it takes place both in the cases of acute intestinal poisoning and in the more severe forms of ileocolitis.

5. Cases of simple infantile atrophy present a nearly normal differential leucocyte count, but it would seem that increase of the polymorphonuclear cells may indicate the setting in of an inflammatory intestinal complication.

**Anemia.** Some *unappreciated causes of anemia* in childhood are mentioned by W. C. Hollopeter.<sup>1</sup> The time of the primary dentition is often a time of ill-health, and the little patient is markedly anemic at the end of the period. The author feels that the gastrointestinal tube is more at fault than irritating food, and that these conditions might be avoided if the child's mouth were kept clean and its personal hygiene looked after. The great primary cause of anemia in children is dental caries. It furnishes more cases of anemia, is more prevalent and is least appreciated of all disorders of childhood. The pus formation

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(1) Journal American Medical Association, Jan. 31, 1903.

results in general septic involvement of the whole alimentary tract. It is present in about 90 per cent of all children between the ages of 6 and 10.

Neglect of the teeth brings on stomatitis, ulceration, gangrene, pyorrhea; it extends to the jaws and causes periostitis, alveolar abscess, necrosis; to the soft parts causes recurrent tonsilitis, and possibly meningitis by direct extension.

Stenosis of the nose and eye strain may contribute their part to the obscure anemias of childhood.

The author concludes that the mouth in children is most frequently unhygienic, and we must recognize that there is a limit to the power of the stomach to cope with a constant stream of pus pouring into it from decayed teeth.

The foregoing paper, which was read at the meeting of the American Medical Association, 1902, did not receive unanimous support in the discussion. Morse does not believe that dental caries is the most common cause of anemia in childhood. How can the essayist tell, in a given child, whether it is decay of the teeth, inherited weakness of constitution or the environment which causes the anemia? The author says that 90 per cent of all children have dental caries, and yet, says Morse, who would maintain that 90 per cent of all children have anemia?

Cotton thought that a child suffering from dental caries is in a condition of poor hygiene, and for this reason perfect digestion of food can hardly go on under such circumstances. He believes that anemia may result secondarily from dental caries.

Kerley said that the majority of cases of anemia were dependent upon improper feeding during the second year. Griffith thought that rickets is an important cause of anemia, and since rickets predisposes to early decay of the teeth it occurred to him that both the caries and the anemia are the result of the same cause, namely, rickets.

The Editor, who took part in the discussion, said that many would dissent from the view that anemias are largely produced by decaying teeth.

A case of *severe anemia* in a child of 2½ years is reported by F. S. Churchill.<sup>1</sup> The physical examination showed emaciation, pallor, marked beading and flaring of the ribs,

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(1) Chicago Medical Recorder, May, 1902.

a harsh systolic murmur over the heart, splenic enlargement ( $4\frac{1}{2}$  cm. below the arch), temperature of  $105^{\circ}$ , with rapid pulse and respiration. The blood examination was of extreme interest; hemoglobin, at one examination 30 per cent, a month later 25 per cent; red blood cells, 2,104,000, second examination 860,400; the white blood cells, 18,800 and 24,400. The differential count was as follows: Large lymphocytes, 9 per cent; small lymphocytes, 33 per cent; neutrophils, 31 per cent; and eosinophiles, 3 per cent. At times megaloblasts and normoblasts were found. The writer classes this case under the head of "anemia infantum pseudo!eukemia." He agrees with those authors who believe that this disease is not a primary but a secondary anemia, and may be dependent upon a great variety of causes. In this case rickets was the etiologic factor. The treatment of the case was chiefly by diet and intestinal disinfectants. Various modifications of milk were tried; calomel and salol, arsenic in the shape of Fowler's solution, were given. Oxygen inhalations were also used.

Writing of *splenic enlargement* in children, Samuel West<sup>1</sup> states that the blood-making organs in children are particularly liable to respond to pathologic irritants. Splenic enlargement is very frequently observed; in malaria, leukemia, Hodgkin's disease, and in tuberculosis and syphilis, the spleen can commonly be demonstrated. The combination of splenic tumor and anemia constitutes the so-called "anemia splenica." The tumor may reach to the umbilicus and to the anterior superior spine. It is smooth, not painful to pressure, though the abdomen is usually prominent. The skin is glossy, as a rule, and olive-green in color. The blood examination shows simple anemia, and the treatment consists of fresh air, nourishing food, cod-liver oil, iron and hypophosphites. Cases of malaria and syphilis should receive the specific remedies. The splenic tumor occurs in rickets, though not so constant as in simple anemia and syphilis.

(1) Wiener medicinischer Presse, 1902, No. 42.

## DISEASES OF THE SKIN.

**Edema.** An interesting report of thirteen cases of *edema apparently epidemic in character* is made by Halsey DeWolf.<sup>1</sup> An analysis of the cases shows that the patients were from 6 days to 2 years old. In all of them except three, a definite history of gastroenteritic trouble existed. Of the 13 cases, 9 died and 3 were discharged before the disease terminated. Necropsies were held on 6, and in 3 broncho-pneumonia was found.

The symptoms were the following: The patients were pale and pasty looking, apathetic and depressed. Temperature was subnormal, the skin dry and soft, pitting deeply on pressure. In some the puffy face almost concealed the eyes, while the legs and arms looked as if they would spurt water if punctured. A very noticeable feature was the rapidity with which the swelling changed its locality; one day the face would be involved, the next day the legs would swell, the condition in the face disappearing. The infant's weight increased during the time that the edema was present, and diminished with the decrease in swelling. The urine was not diminished. None of these children was breast-fed, all of them being upon modified milk. In 9 cases albumin appeared in the urine, while in 4 there was some further evidence of kidney involvement. The postmortems showed cloudy swelling of the kidneys with infiltration of the interstitial tissues by round cells.

The author, after speculating at some length as to the possible cause of this epidemic edema, finds no etiologic factor, though he believes that the most reasonable theory which presents itself for the production of this unusual epidemic is that a period of severe bowel disturbance occurring in these patients rendered them susceptible to some common infection possibly acquired from the milk. This infection spreading from the gastrointestinal tract produced pathologic changes in the blood and blood vessel walls, affecting to a greater or less degree the kidneys, and resulting in the general edema.

**Elephantiasis.** L. Bernhard and M. Blumenthal<sup>2</sup> con-

(1) Archives of Pediatrics, December, 1902.

(2) Deutsche medicinische Wochenschrift, Dec. 11, 1902.

tribute a paper on congenital elephantiasis. It is found most frequently among acephalic and other monsters where the disturbed circulation plays an important part. The changes which occur are not confined to the connective tissue of the skin and subcutaneous tissue, but the blood vessels, nerves, muscles and bone are also affected.

Esmarch and Kulenkampf divide cases of congenital elephantiasis into two classes: those in premature or faultily developed infants, and those in various parts of the body resembling tumor formation. The second class includes cases of simple elephantiasis and those in which blood vessels and nerves are principally involved.

The authors had under observation a case of congenital elephantiasis of the left lower extremity. A microscopic examination of the tissues revealed extensive involvement of the lymphatic circulation as well as the connective tissue. A proper classification of cases is impossible without microscopic examination. Heredity, infection or inflammatory processes are not etiologic factors. Amniotic adhesions may cause local elephantiasis.

**Scleroderma.** The pathology and treatment of scleroderma in children is discussed by Wilhelm Ebstein.<sup>1</sup> His case occurred in an otherwise healthy boy of 8, who presented areas of skin which were characterized by induration and loss of elasticity. The mouth, cheeks and lips were involved and the face was almost immovable. Motion was not markedly impaired, and sensation and reflexes remained intact. No marked changes occurred in the muscles. The heart was moderately enlarged and a systolic murmur was heard over the apex. The examination was otherwise negative. The skin was markedly thickened, but not atrophied or pigmented. No etiologic factor could be determined in this case, but the infectious theory should be considered in all cases of scleroderma. The prognosis is bad; atrophy and shrinking usually occur, but the outlook in children is better than in adults, as resolution sometimes takes place. Ebstein advises the use of bran baths containing acetic acid, massage with boro-salicylic salve, and internal administration of salicylates.

Jacob Sobel<sup>2</sup> calls attention to the more common conta-

(1) *Deutsche medizinische Wochenschrift.*

(2) *The American Therapeutist*, March 15, 1903.

gious diseases which are met among the school children of lower East New York. These are pediculosis capitis, impetigo contagiosa, tinea tonsurans, and circinata, favus, scabies and molluscum contagiosum. He advocates separate school buildings for the children thus afflicted, and urges prompt treatment.

**Xerosis—Ichthyosis Type.** Randolph Hunt<sup>1</sup> reports this case. The patient was a male child, 6 years of age. Skin normal till he was 6 weeks old. Talipes valgus developed in learning to walk. He did not learn to talk until he was more than 3 years of age. Now the child is unusually bright for his age. There is a history of syphilis in the mother. The child has Hutchinson teeth. At 3 years of age he had no hair on his head, but it has grown since treatment was begun. Eruption universal, worse on legs, hands and head. The legs are tassellated with adherent scales, dark, dirty gray in color; both legs and feet are more or less smooth in spots, in which case the scales are closely adherent. The skin at these points is thickened, and in many places fissured. The hands are much like the feet. The face is senile; the lids ectropic. The scales are not shed easily, and all over the body the tendency to induration and to fissuring is noticeable. The stiffness of the knees and elbows, together with the evidences of lack of epithelial formation, point to an imminent trophic change.

*Treatment.* Certain seasons would seem to favor some improvement, and the skin becomes softer. But treatment, on the whole, seems to have accomplished very little.

## DISEASES OF THE KIDNEYS.

No decided advances have been made during the year in the study of the renal diseases of childhood. Caillé discussed Edebohl's operation of decapsulation before the 1902 meeting of the American Pediatric Society. It is doubtful whether, in the present state of our knowledge, physicians either in hospital or in private practice would sanction this surgical procedure. This is particularly true when one remembers the undisputed dictum that the dis-

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(1) New Orleans Medical and Surgical Journal, May, 1903.

eased kidney of childhood shows a marked tendency to return to normal.

**Acute Nephritis.** This occurs not infrequently as a *manifestation of influenza* in children, says B. E. Rathford.<sup>1</sup> The characteristics of the nephritis, as observed by him, are as follows:

a. It occurs more quickly and violently than nephritis produced by scarlatina, diphtheria and other such infections.

b. The worst symptoms occur six or seven days after the kidney is attacked.

c. If complete suppression and profound uremia do not destroy life during the first week, a sure and steady improvement begins which leads to complete recovery. In some cases chronic nephritis results.

d. In adults the picture is different; the disease is not as frequent and chronic nephritis results more often. From his experience the author considers acute inflammatory nephritis in children, not as a sequel or complication, but as a part of the influenzal attack.

O. Huebner,<sup>2</sup> in considering the *clinical pathology of the kidney in scarlatina and diphtheria*, calls attention to the histology of the uriniferous tubules and its bearing on the findings in the urine. Owing to the small caliber of the descending limb of Henle's loop, only exceedingly small objects, like the smallest red corpuscles, can pass through. Therefore if the epithelium lining the proximal convoluted tubules is diseased, neither casts nor degenerated cells would appear in the urine, except as a granular sediment, which might also have its origin in that part of the tube distal to the loop. The author sectioned the kidney of two fatal cases of scarlet fever, and found a severe grade of hemorrhagic inflammation with an intense primary involvement of the glomeruli and a secondary involvement of the epithelium lining the proximal convoluted tubule. Hyaline casts, free epithelia and occasional hemorrhages were found in the straight tubes. These microscopic findings correspond with the hemorrhagic character of the clinical findings of a scarlatinal nephritis.

In the diphtheritic kidneys which he examined, hemor-

(1) Medical News, March 15, 1902.

(2) Muenchener medicinische Wochenschrift, Jan. 27, 1903.

rhages were found only occasionally in isolated straight tubes of the medullary ray, but never in the vicinity of the glomeruli. A primary degeneration of the tubular epithelium, especially the epithelium of the ascending limb of the loop and the distal convoluted tube, is characteristic of the diphtheritic kidney. According to Ribbert, this part of the tube has the function of concentrating the urine by absorbing some of its fluid, and therefore if the urine contained a diphtheritic poison it would act with particular severity on that portion of the tube. In the second diphtheritic kidney only the epithelium of the proximal convoluted tube was degenerated. Free epithelia and a few hyaline casts were found in some of the collecting tubes. The diphtheritic urine is usually free from blood but contains epithelial cells and hyaline casts, in accordance with the microscopic findings. It has been shown by various authors that it is possible to have a glomerulonephritis without any involvement of the tubular epithelium, and vice versa. Cantharides, for instance, cause a glomerulonephritis; the poisonous metallic salts cause a necrosis of the tubular epithelium. By keeping in mind the histology and pathology of the kidney, the clinician is at all times able to obtain a distinct anatomic picture of the diseased kidney in scarlatina and diphtheria, and to utilize such knowledge for differential purposes.

Baginsky and his students have been diligent workers in the *pathology of scarlatinal nephritis*, and any contributions from this source deserve thoughtful attention. Baginsky<sup>1</sup> found that in children who died during the first week of the disease, a circumscribed, diffuse, cellular infiltration was noted in the kidney. Those who died during the second week showed degeneration of the cells of the straight and convoluted tubules. Those who died during the third week showed distinct changes in the glomeruli.

The author details the important clinical symptoms. Fever is nearly always present, though even this may be absent; in the majority of cases there is a rise in temperature to 39° or 39.5° C. [102.2° to 103.1° F.]. In the typical cases the amount of urine is diminished, though sometimes it may be normal, or polyuria may occur. He

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(1) Pediatrics, Feb. 1, 1902.

observes, too, that cases with large amounts of albumin are the most dangerous. If the urine contains hemoglobin, the outlook is grave. Hydrops, manifested by edema of the eyelids and the skin and effusions into the serous membranes, occurs not infrequently. If uremia occurs, the wiry pulse, delirium, sleeplessness, crying and singultus are characteristic symptoms. One should remember that cases which at first are mild may later on be followed by the severest attacks of uremia. The author offers the following suggestions in regard to the treatment of these cases:

Prophylaxis will not prevent the nephritis of scarlet fever, but he insists that the severer cases associated with hydrops, uremia and subsequent chronic nephritis may be very often prevented by proper diet and hygiene. The nephritic patient should remain in bed at least four weeks. During the first two only milk is given, and during the last two a vegetable diet. Diuretics may be employed for the nephritis, in the form of alkaline waters. Tannic acid may be given if there is prolonged albuminuria. Uremia is treated along the usual lines. Chloral, chloroform and venesection are the most valuable remedies. Where chronic nephritis supervenes, a change to a warm climate is indicated.

*Hot water in scarlatinal nephritis* is advocated by Kerley.<sup>1</sup> Irrigation of the bowels with hot water should be employed whenever the quantity of urine is diminished, or when convulsions occur. In a child of 3 years 500 to 750 c.c. should be introduced by means of a rectal tube passed into the rectum for a distance of an inch. If the water is returned at once, the process is repeated, and irrigation should be performed every six or eight hours. After three or four administrations the kidneys begin to act and abundant diuresis takes place.

The *renal complications of the acute diarrheas of infancy* are treated of by J. L. Morse.<sup>2</sup> Acute degenerative changes may occur in the kidneys in the acute enteric diseases of infancy, as in other acute infectious and febrile diseases. These are mainly degenerative in type, show nothing characteristic and are similar in every way to

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(1) Medical Record, Aug. 3, 1902.

(2) Medical News, June 7, 1902.

those found in other infections both in infants and adults. In rare instances proliferation and interstitial changes may develop. The etiology of these conditions is complex, including not only micro-organisms and other toxic products, but also the products of intestinal fermentation and alimentary poisons. The urine shows the changes usually found with such pathologic conditions in the kidneys. It is doubtful if these renal complications cause any symptoms distinguishable from those due to the general toxemia. Restlessness, persistent vomiting, unexplainable dyspnea, edema and myosis have, however, been attributed to them and considered characteristic. It is probable that except in rare instances they are of little or no prognostic importance and are merely an index of the degree of toxemia. Recovery from these lesions is usually complete. It is possible that they may lead to chronic nephritis in later years. Pyelitis, pyelonephritis and cystitis may also develop as complications. They are usually of a mild type and their symptoms are masked by those of the primary disease.

Martin Hohlfield<sup>1</sup> gives a full account of the literature and the historical development of the *pathology of the kidneys in the gastrointestinal diseases of nursing infants*. He reminds us that Beckman was the first to observe thrombosis of the renal veins in infants who had died of diarrheal diseases. Other authors have studied the kidneys of cholera infantum and have shown that parenchymatous nephritis is almost always found in children who have died of this disease. Morse, of this country, published a valuable paper on this subject several years ago, and showed that renal degeneration was commonly found as a result of the intestinal infections in infants. Koplik published 25 cases in which he showed that uremic symptoms and edema associated with renal degeneration was an expression of the toxicity produced by the gastro-enteric diseases.

Hohlfield follows this résumé with a report of 40 cases of his own in children who were artificially fed. He details the methods which he employed to collect the urine. In one group of cases albumin was not always present, though hyaline epithelium and granular casts occurred frequently. In the more severe cases the quantity of the

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(1) Deutsches Archiv für klinische Medizin, 1902.

urine was diminished, albumin was nearly always present, and renal epithelium and casts were detected. In several cases, too, he found undoubted uremia with general hydrops. At necropsy the severer cases showed degenerative lesions of the kidneys.

**Chronic Nephritis.** A. Caillé<sup>1</sup> reports a case of chronic parenchymatous nephritis in a child, for which *Edebohl's operation* was performed. The kidneys were delivered through the usual lumbar incision. The capsules were split and removed and the kidneys then replaced. Three months after, the condition was as follows: Temperature 99°; pulse 90; respirations 20. The child was anemic, but had gained in weight; there was no edema. The urine showed a small amount of albumin and a few leucocytes and casts.

In speaking of nephritis in children, the writer says that the mildest cases following the acute infectious diseases have a tendency to recover. In a certain percentage, however, recovery does not take place. In view of the uselessness of medication in chronic nephritis, the proposition to treat chronic Bright's disease surgically should be met without prejudice.

**Pyelitis.** According to Thompson,<sup>2</sup> *acute pyelitis in infants is not very rare*. The diagnosis depends mainly upon the presence of pus and bacilli in the urine, associated with high temperature, and upon the absence of other causes of these conditions. The chief factors, apart from the urinalysis, that suggest pyelitis are: (1) the pyrexia and the extreme distress without any sign of organic disease sufficient to produce them; (2) the presence of rigors, if malaria can be excluded; (3) any local tenderness, or pain on micturition.

The treatment consists in the administration of alkaline remedies until the symptoms have disappeared. After the pus has ceased to be present in the urine, ordinary tonic measures are all that are necessary. The alkali used by the author is citrate of potash; it is best to begin with from 36 to 48 grains in the twenty-four hours. No harm results from the depression caused by the alkalies. Antiseptics are not very efficacious, but sometimes are distinctly

(1) Archives of Pediatrics, October, 1902.

(2) Abstract in Therapeutic Gazette, Dec. 15, 1902.

helpful in accelerating the disappearance of the pus. The most beneficial results have been obtained from salol in 1 to 2 grain doses. Creosote was found very useful in one case by Baginsky. Antipyretics are quite unnecessary. The child should be encouraged to drink as much fluid as possible.

A few other facts of importance concerning this complaint are: (1) In infant girls, when debilitated by any cause, acute pyelitis may be set up by the migration of the bacillus coli from the bowel. (2) Unlike any other disease except malaria, it frequently causes rigors even in young babies. (3) The presence of any anal excoriations has possibly an important etiologic significance in these cases. (4) Prognosis is altogether favorable, although complete recovery is sometimes delayed for many weeks.

[In the recent literature the number of cases of pyelitis in children has increased, and all reports on these are valuable, especially such as have been carefully studied. An increase in our knowledge of the etiology is desirable.—  
ED.]

**Floating Kidney.** Rees Phillips<sup>1</sup> reports a case of floating kidney. This condition he believes to be rare in infancy. A new-born child had repeated attacks of greenish vomiting and collapse. The left kidney floated forwards, causing a prominence of the abdominal wall just below the ribs on the left side. The right kidney was also movable, but not floating. The child also had convulsions.

**Cancer.** A malignant tumor of the kidney was met with by J. Eustace Webb and C. M. Aberd<sup>2</sup> in a female aged 6 years. Emaciation, anxious expression, great pain and tenderness over whole abdomen, especially in right iliac region; constipation; temperature 103°, pulse 110. Board-like rigidity of abdomen; coated tongue. In a week peritonitis subsided, a large firm swelling smooth to the touch, occupying the right abdomen, remaining. The urine was alkaline and contained mucus and epithelial scales. Subphrenic abscess was thought of. Temperature normal, with an occasional irregular rise; pulse 110-120 and feeble; liver dulness increased; bulging and fluctuation in right flank.

(1) Lancet, March 14, 1903.

(2) Lancet, Oct. 18, 1902.

**Operation:** Distended kidney capsule contained broken-down nodules, evidently of malignant nature. Death from hemorrhage two hours later. Microscopic examination: Spindle-celled sarcoma with nodules of cartilage. Chief points of interest: (1) Apparent health with malignant growth; (2) acute peritonitis masking the true nature of the case; (3) fatal result of operation, from hemorrhage.

### DIABETES MELLITUS.

The subject of infantile diabetes mellitus is presented by Howard E. Lomax.<sup>1</sup> Cases have been discovered in infants a few months old, and in one case sugar was found in the amniotic fluid; the infant also suffered from diabetes. Intra-uterine diabetes may therefore be said to occur in rare instances. The disease in children is most frequent at the age of 5 years. The sex relation to this disease is undetermined; reports offer wide variations. The etiology is more obscure than among adults, though the same factors enter into consideration. In this paper the relation of this disease to diseases of the pancreas is alone considered and the theory is assumed that carbohydrate metabolism is regulated by the internal secretion of the pancreas, and that the islands of Langerhans are specially involved, though this fact has not been especially determined for infants. The author's case shows the classical symptoms of this disease in infants. No recoveries are recorded and nothing new is offered in regard to treatment.

### DISEASES OF THE GENITALIA.

**Gonorrhea.** An epidemic of gonorrheal urethritis occurred in Fischer's<sup>2</sup> practice in an institution for boys. While this variety is rare, epidemics among female children are common. A consideration of the cases in the literature and the author's cases show that the symptoms are very severe and persistent. Complications as they occur

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(1) Albany Medical Journal, February, 1903.

(2) Muenchener medicinische Wochenschrift, November, 1902.

in adults are frequent, with the exception of prostatitis and chordee. In a large percentage of cases the manner of infection could be determined. Sexual intercourse, sleeping with others suffering from gonorrhea, handling by attendants and exchange of articles of clothing have resulted in infection. The author believes the mother is the commonest source of infection of the infant.

A careful study of the literature on *gonorrheal vulvovaginitis* in children, and a personal experience with 5 cases leads R. F. Woods<sup>1</sup> to the conclusion that most cases are of gonorrheal origin, that the disease in children is more dangerous than is usually supposed, and that the after effects are sometimes appalling. Fraenkel found a diplococcus resembling the gonococcus in the discharge in 62 cases of vulvo-vaginitis; Cseri found a similar organism in his series of 26 cases; Morse in 16 out of 21 cases; Cohenbrach in 20 out of 21 cases. Suchard reports 12 cases in which towels carried the infection. Weil traced the infection in 30 cases to the use of the rectal thermometer. Skutch reports 160 cases of the same disease contracted from the free baths at Posen. All of these patients presented unmistakable local symptoms and constitutional symptoms of gonorrhea, but the gonococcus was found in only 60. Williams found the gonococcus in 4 out of 5 cases. Pott considered all of his cases gonorrheal. O'Donovan says that in vulvovaginitis in negro children the gonococcus is invariably found in the discharge. Martin inoculated the urethra of a man with some of the discharge from an infant suffering from a vulvo-vaginitis. A severe gonorrheal urethritis followed. It should be remembered in this connection that the finding of diplococci in the discharge is by no means positive evidence of gonorrhea, inasmuch as a variety of diplococci are found in the vaginal secretions even in health. A positive diagnosis can be made only by cultivating the organisms found and then producing the disease by inoculation of the culture.

Woods classifies the causes as follows: 1. Catarrhal; (a) filth, (b) exanthemata. 2. Trauma; (a) rape, (b) masturbation, (c) mechanical injury. 3. Infectious; (a) oxyurides, (b) pathogenic bacteria. Gonorrheal vulvovaginitis apparently can be contracted from towels, bathing

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(1) American Journal Medical Sciences, February, 1903.

vessels, bed linen, etc. Currier believes that the infant may be infected by its mother during parturition. The microscope alone can determine the infectious or noninfectious nature of the disease. The symptoms in either case are typical. The vulva is bathed in a thick yellowish or whitish discharge, which on pressure seems to exude from the vagina. In advanced cases the vulva and vagina are swollen, red and painful to pressure. There is a slight rise of temperature; the constitutional symptoms may be marked. There may be painful urination; cystitis is rare. Ophthalmia is the most common complication. Urethritis is quite common in the gonorrheal variety. Articular rheumatism in children should be viewed with suspicion, especially when complicating a vulvo-vaginitis. By far the most serious complication is peritonitis, the infection ascends through the uterus and tubes. Many cases of this kind have been reported. Saenger goes so far as to say that pelvic disease in a virgin, the origin of which is doubtful, can be referred back to infantile salpingitis following a vulvo-vaginitis that remained quiescent until after puberty. Sterility is sometimes due to the same cause, and many of the deformed, undeveloped, or infantile uteri are the sequence of infantile vulvo-vaginitis.

Woods' treatment in the main consisted of enforced cleanliness and proper hygiene; tonics and small doses of quinin or syrup of the iodid of iron *t. i. d.* The bowels were carefully regulated. Potassium permanganat douches in the strength of 1:2000 and 1:1200 were given twice daily; the genitals being first thoroughly cleansed with soap and water. Powdered boric acid was introduced into the vulva and vagina after each douche. A 2 per cent solution of silver nitrat; bichlorid of mercury; iodoform bougies; insufflation of iodoform and bougies containing 2 per cent of alumnol are remedies favored by various writers. The greatest care should be taken to prevent ophthalmia. The author reports 5 cases in his own practice.

H. Lowenberg<sup>1</sup> is convinced that *extragenital gonorrheal infection in infants and children is by no means uncommon*. The usual avenues of infection are the conjunctivæ, mouth, and anus. Gonorrheal ophthalmia neonatorum is encountered most frequently among the poor and illiterate, and its

(1) American Medicine, Feb. 21, 1903.

origin usually can be traced to carelessness on the part of the accoucheur or ignorance of the parents. Gonorrheal vulvo-vaginitis, occurring between the ages of 2 and 5, is frequently seen in dispensary practice, and is traceable to gonorrhea in the mother or nurse, unclean rags and towels, or use of an infected syringe. Unless a microscopic examination is made of all discharges, the gonorrheal nature is extremely liable to be overlooked. Out of a total of 1,500 dispensary cases, only two cases of gonorrheal infection of the urethra in boys were seen. One of these cases was in a colored boy, aged 8, the victim of rape. The second case was in a white child aged 4. This boy complained of burning and painful urination, intense itching about the penis, pain, and a feeling of weight in the hypogastrium. He could not walk erect and kept his legs separated continually. He also had a phimosis, and the prepuce was intensely inflamed, edematous and adherent. The bladder was palpable  $1\frac{1}{2}$  inches below the umbilicus; he had not urinated for sixteen hours. Pulse 100; temperature  $101^{\circ}$ . Microscopic examination of the discharge showed gonococci in large numbers. The source of infection could not be traced with any degree of satisfaction. The boy was in the habit of picking rags and probably received pus on his hands and then transferred the infection to his genitals. Circumcision and appropriate treatment cured the case in two months.

Lowenberg concludes as follows: 1. All urethral discharges in young boys should be viewed with suspicion. 2. All such should be submitted to a microscopic examination. 3. Should the gonococcus be found present, the possibility of the case assuming a medico-legal nature should be borne in mind. 4. The question of rape should either be carefully eliminated, or conclusively proved. 5. The treatment consists of local cleanliness and the free action of the emunctories in conjunction with the administration of urinary antiseptics and alkalis. 6. Gonorrhea is not a contraindication to circumcision. 7. Vulvo-vaginitis in little girls is very often due to the gonococcus.

## DISEASES OF NERVOUS SYSTEM.

**Cretinism.** S. T. A. Kent<sup>1</sup> reports a case of cretinism in a male infant five months old. The family history is interesting in that a first cousin on the paternal side and a distant relative on the maternal side had been afflicted somewhat as this child; both of these relative died at an early age. The patient seemed normal until 5 months old when it came under Kent's observation. He found the baby nervous and obstinately constipated. A tightly adherent prepuce was operated upon. At 8 months the baby would hold a watch in his hand and grasp at a flower. When ten months old, his neck could not support the head, his tongue was thickened and protruded between the lips, the under lip was thick and patulous; his mental condition was of low grade. He now developed crying spells lasting four or five days during which he would not sleep; he had nervous seizures in which he assumed a position of opisthotonos. These symptoms were controlled by enemas of bromid of sodium and chloral hydrate. During the ninth month of its life the author gave the child 1-7 grain of thyroid extract twice a day. Marked improvement ensued immediately, the teeth, though irregular, began to come through, the tongue returned to its normal size and thickness, the mind made wonderful improvement. At the present time he is taking 1 grain three times a day and the improvement continues. Had to discontinue drug once because of loss of flesh, but this was only for a short time.

A case of *sporadic cretinism* that shows the highly satisfactory results of thyroid feeding is reported by R. Engelmann.<sup>2</sup> The child was 7 years old when the feeding was begun; size about normal for a child of 3 years, and showed all the characteristic symptoms of cretinism. At the time the report was made, the child had been fed on thvroid gland for two years and two months, with the exception of withdrawing it for a period of two months. There had been an increase of 3 inches in height, there was improvement in the symmetry of the body, the skin had assumed a more normal quality, color was good; the teeth had all

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(1) Virginia Medical Semi-Monthly, Dec. 12, 1902.

(2) Journal American Medical Association, Feb. 14, 1903.



Fig. 8. B. L., cretin, at age of 3. No treatment.—Engelmann's Case.  
(Jour. Am. Med. Assoc.)

come through, and there had been great improvement in intelligence. During the two months in which the thyroid was withdrawn the child retrograded decidedly, but soon regained what he had lost when the extract was resumed.

*The results of one year's treatment in a case of cretinism*



FIG. 9.

Fig. 9. B. L., age  $3\frac{1}{2}$ , after six months' treatment.—Engelmann's Case. (Jour. Am. Med. Assoc.)



FIG. 10.

Fig. 10. B. L., at age 7 years; after two weeks' thyroid feeding.—Engelmann's Case. (Jour. Am. Med. Assoc.)

are given by A. H. Davisson.<sup>1</sup> The child was two years and two months old when the treatment was begun. It was a typical case of cretinism, as well as of rickets. Severe diarrhea with a temperature of  $104.6^{\circ}$ , pulse 144, respira-

(1) Philadelphia Medical Journal, Oct. 25, 1902.

tion 38, set in at the start, but recovery followed and treatment was resumed. A month later the child was sick with



Fig. 11. B. L., age 9 years and 4 months, after 2 years' treatment.—Engelmann's Case. (Jour. Am. Med. Assoc.)

measles with severe bronchial complications, the cough leading to obstinate and severe prolapse of the rectum. The

photograph and the measurements after two years of persistent thyroid treatment show marked improvement in symptoms and growth, although the symptoms of rickets are still marked. Maximum dose of thyroid 12 grains daily.

A case of sporadic cretinism in which a *relapse occurred, owing to omission of thyroid extract*, is narrated by Arthur Hall.<sup>1</sup> On improvement the treatment was discontinued by the parents, as they claimed the drug made the child weak. This was probably true, as the dose should be small after improvement is manifested. A condition of myxedema set in. Later, the treatment was resumed with equally good results.

**Mongolism.** Twenty-six cases of mongolism are analyzed by John Muir.<sup>2</sup> Very little has been written on this subject until recently; up to February, 1902, but very few references were found in periodical literature, except from Great Britain. Many names have been suggested, but the term "Mongol" has survived, being expressive and descriptive. It might be defined as a type of mental feebleness, always congenital in origin, characterized by certain cranial and later by lingual changes. The disease is confined to the Caucasian race, and is a fairly common condition in all large out-patient clinics in London, and is at least four times as common as cretinism.

The etiology is varied. In Muir's cases, drunkenness in the parents, unfavorable environments, a family history of insanity, violence of temper, suicide, neurotic temperament, premature birth, prolonged and complicated labors, fright and worry, tuberculosis, and syphilis figured in the prenatal histories. As to sex, the children are nearly equally divided. His cases largely bear out the point insisted on by Thompson, that the symptoms are present from birth.

The characteristic features are found in the skull, eyes, tongue and hands. The occipito-frontal circumference is always diminished, the average diminution being 1.3 inches, and a shortening of the normal antero-posterior diameter is always present in typical cases. Other characteristic features are a late closure of the fontanelles, de-

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(1) British Medical Journal, May 24, 1902.

(2) Archives of Pediatrics, March 1, 1903.

pression and fullness of the face, and many ocular abnormalities—strabismus, nystagmus, epicanthus, etc., all of which were represented in the author's cases, but, contrary to the opinion that ophthalmia tarsi is almost universally present, it was present in only 2. The mouth was usually kept open and in the low grade cases there was dribbling of saliva. The tongue was never much enlarged and only slightly protruded, but the characteristic hypertrophy of the fungiform papillæ followed by fissuring of the surface, always developed after a certain age. There were palatal deformities in 65 per cent, rhinitis was common, and adenoids almost universally present. The ears were often deficient in shape. The teeth in all cases were characteristic; the hair and skin, in a large proportion of cases, normal.

Regarding physical development, the stature was, on an average,  $3\frac{1}{2}$  inches less than normal. The hand was characteristic of Mongolism, and the body ligaments usually lax. In 14 cases, the cerebral and mental condition was one of low-grade idiocy, and in the others it was comparatively little more, the brightest of the whole series being refused admission to the School for Backward Children. Almost every conceivable malformation and stigma of degeneration are found among Mongols, the writer's cases being no exception.

The diagnosis is comparatively easy; the prognosis is bad, both as to life and mentality. He had not been permitted, as yet, to examine a case post-mortem. Treatment has availed nothing in his hands, although the general condition sometimes improves a little under malt and oil.

**Amaurotic Family Idiocy.** B. Sachs<sup>1</sup> describes the changes found in a case of amaurotic family idiocy. The dura was firmly adherent to the bones; the cortex was so firm that the knife grated as it passed through; the convolutions were small and the fissures peculiarly arranged. The fluid in the pia was markedly increased in amount. Sections showed a degeneration of the pyramidal tracts in the lateral and anterior columns of the cord and extending upward into the capsule, crusta, pons and medulla. The grey matter, however, showed the most marked changes. In the cortex, as in the anterior grey matter of the cord,

(1) *Pediatrics*, Jan. 13, 1903.

the entire protoplasm of the cells was disintegrated, forming a more or less homogeneous mass. The nucleus was pushed to one side, and not easily differentiated from the cell protoplasm; it was often wanting. The metamorphosed ganglion cells were frequently surrounded by distinct pericellular spaces. The inference drawn from the study of this and other cases is, that in amaurotic family idiocy the entire central grey matter is the seat of an intense degeneration; also that somewhat similar changes are found in conditions more or less closely allied to this special type of family disease; but if closely allied the clinical picture is so distinct that it can well be considered a special form of family disease.

**Hysteria.** A contribution to the etiology of hysteria in children is made by Bruno Leick.<sup>1</sup> Hysterical affections occur more often in children than is generally supposed. A case under observation occurred in a boy of 9 who complained of malaise, anorexia and especially of progressive and very marked deterioration in writing, which, before his trouble commenced, was very good and then gradually became almost illegible. Suggestive therapeutics (faradic electricity) resulted in an immediate cure.

**Neurotics.** Neurotic children are considered by G. M. Hammond<sup>2</sup> to be those whose *nervous force is below the normal standard*, and whose nerve elements through heredity or accident, or both, are imperfectly developed.

As etiologic factors may be considered: the comforts, ease and luxury which have become so common in this country; or the existence of some nervous disease in one or both parents; or an alcoholic and syphilitic heredity. These children manifest exceptional mental ability without corresponding physical strength. Instead of pushing such children in mental acquirements, they should be repressed. Treatment should be begun early in life. The diet of neurotic children should be largely nitrogenous, and great care should be exercised in restraining them from eating injurious foods. They should not be allowed to over-feed. Moral treatment is also of great importance; they should be restrained and made to obey, though severe punishment should not be dealt unless it is

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(1) Deutsche medicinische Wochenschrift, May 15, 1902.

(2) New York Medical Journal, Aug. 30, 1902.

absolutely necessary. This teaches self-restraint and self-control. Exercise, not too vigorous, however, should be regular and continued, preferably in the open air.

Practical experience has shown the writer that by the methods suggested, children of neuropathic tendencies may, without doubt, develop into perfectly healthy men and women.

G. F. Still<sup>1</sup> says that *abnormal psychical conditions in children* might be grouped thus: (1) Morbid failure in development of moral control; (a) congenital limitation of capacity for moral development, and (b) arrest of moral development by disease in infancy. (2) Morbid loss of already acquired moral control; (a) in relation to physical disease, permanent or temporary loss of moral control, and (b) apart from physical disease, permanent, temporary, or recurring loss of moral control. All these varieties may occur apart from any general impairment of intellect. The most striking evidence is to be found in the family history and stigmata of degeneration, association with other mental and nervous disorders.

In some cases incapacity for the acquirement of moral consciousness is a developmental reversion to an earlier type; solitariness is a characteristic trait as well as lack of natural affection.

Cell modification, dependent upon interference with cell nutrition, may be the typical basis of the moral defect. The striking relation to specific fevers strongly supports the view that toxic substances may be the determining cause of the alteration in cell nutrition.

Even some years before puberty, these children manifest a precocious development of the sexual instinct. This danger increases with the approach to puberty, and leads to most outrageous and precocious immorality. The problem of education in face of the paramount necessity for separating some of these morally defective cases from other children; the method of providing the constant and close supervision which is so essential in their management, and which is often so impossible for the middle and poorer classes; how far restraint by confinement in special institutions is called for; and, last but not least, how far these children are to be held responsible for their misdoings—

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(1) American Practitioner and News, Feb. 1, 1903.

all these are questions which call urgently for consideration in their proper place.

**Insanity.** Treating of insanity in children, M. R. Crawford<sup>1</sup> informs us the thing that struck Prof. Münsterberg with the greatest surprise, was the forwardness and conspicuousness of children, in this country. On this account, American children are apt to develop forms of neurosis which crop out from generation to generation, until finally mental monstrosities may appear—idiots, cranks, or epileptics. The brain of a child at birth is practically functionless, and the baby at six months does not know as much as the pig or lamb of six days. At the age of 5 or 7, the child has a developed memory, but reason, judgment, and will-power are singularly undeveloped. It is a question yet undecided how far heredity plays a part in the development of a child, and what is the influence of example. Children are far more observant, and far more exposed to outside influence, than is commonly imagined.

Insanity in childhood generally develops between the ages of 7 and 17. It may develop in the form of paranoia, melancholia, or acute and active delirium. The child who is most exposed to danger is the one who is supersensitive, who is excited too easily, who has crying fits without provocation, who is imaginative, and who is exposed to the modern system of cramming and competitive examinations in schools. The majority of cases occurring among children can be classed as developmental idiocy. Suicidal mania is common. Children engaged in labor are less liable to insanity than school children having the liberty to read cheap novels of an exciting nature. The education of children with a neurotic taint requires special care. Overwork should be guarded against.

Some remarks on the *subsequent history of children born whilst the mother was insane* are made by A. F. Tredgold.<sup>2</sup> From a careful study of nearly 200 cases of idiocy and imbecility in women at the time of delivery, the author draws the following conclusions:

1. The mental and physical condition of the child is in no wise influenced by the mere fact of the mother being insane during pregnancy.

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(1) Medical Age, March 25, 1903.

(2) Lancet, May 17, 1902.

2. Neither is the condition of the child influenced by the variety of insanity, the duration of the attack, or the age of the mother; nor even directly by the number of attacks from which the mother has suffered. But that:—

3. This condition is directly dependent upon the presence or absence of morbid hereditary influences.

**Epilepsy.** A paper on the causes of epilepsy in the young embodies some personal experience of A. Jacobi.<sup>1</sup> He states his belief concerning the causes of epilepsy in the young. Diseases, abnormalities, or unnatural conditions of parents may not be transmitted directly to the infant, but there may be a general debility of the tissues or their innervation. Many causes may have an identical result, many results may have one apparent cause. It will probably be impossible ever to estimate the exact number of infant or young epileptics. Many an epileptic infant or child dies before being observed or treated, or even diagnosed.

The actual or approximate cause of generalized epilepsy is in the cerebral cortex; its origin, in anatomic lesions of different localities. Thus, epilepsy may be cerebral, it may be the result of persistently abnormal circulation, or it may be reflex. The relation between Jacksonian epilepsy and a local disorder cannot always be proved. When children of 5 or 7 years are suddenly attacked with epilepsy, either Jacksonian or general, hereditary syphilis should be suspected.

Jacobi has seen one case where hypertrophy of the brain was the cause of epilepsy. A great many epileptics have comparatively small cranial circumference with an asymmetrical shape; in these the writer thinks that premature ossification of the fontanelles and sutures plays an important rôle. There is a possibility that *meningocoele spuria* may result in epilepsy. These cases should not be left unoperated.

A frequent cause of epilepsy is asphyxia of the new-born. A single moment, more or less, of the asphyxiated condition may decide the future of the new-born infant and the presence or absence of a paralytic, idiot, or epileptic misfit in human society. The same danger accompanies intracranial hemorrhage not connected with asphyxia.

(1) American Medicine, Dec. 13, 1902.

When not excessive, it may not destroy life, but the clot and the secondary inflammation and degeneration, and now and then the final development of a cyst of the dura will cause hemiplegia, paralysis, idiocy, or epilepsy. He has seen many cases all pointing undoubtedly to such origin. The frequency of convulsions in infancy and childhood is another danger. He refutes the idea that dentition alone is an etiologic factor in epilepsy, or even convulsions of any kind. Convulsions occur between birth and the thirtieth month, and it happens to be the period of dentition; but it is also the period of defective inhibition, of nephritis, otitis media, enteritis, and the infectious and cerebral diseases. Nephritis, which is common in the new-born, leads as often to convulsions as any other disease. The same may be said of enteritis and coal tar medication. The infectious diseases play an important rôle in its causation. Many a case attributed to dentition could easily be recognized if care was taken to make urinary examinations. Rachitis predisposes to convulsions. The attacks of convulsions in rachitis are, Jacobi thinks, of central origin. They mean the hyperemia or edema accompanying the local softening of the cranial bones. Masturbation is sometimes the cause when it is the result of some local irritation, and many patients recover when the cause of irritation is removed. When masturbation is the result of a central disease, epilepsy may result from it, and both are probably incurable.

**Sydenham's Chorea.** Richon<sup>1</sup> reports some fatal cases of Sydenham's chorea.

(1) A girl of 6, who, in the course of a simple chorea, more marked by the intensity of the psychic symptoms than by the violence of the movements, presented an apoplectic seizure and died in coma within twenty-four hours.

(2) A boy of 11, who was nervous and who, in the course of a mild infection, presented violent gesticulations without psychic troubles. This child died in eleven days. At the necropsy a mitral endocarditis was discovered, of rheumatic origin. There were no macroscopic lesions in the nervous system; but lesions of the different groups of cells were found in the spinal cord.

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(1) *Revue Mensuelle des Maladies de l'Enfance*, October, 1902.

(3) A girl of 14, who was emotional and developed a chorea which became aggravated after two months' duration. In ten days there were febrile phenomena and mitral endocarditis without cerebral symptoms. At necropsy a mitral endocarditis and broncho-pneumonia were demonstrated, but no apparent lesions of the central nervous system.

(4) A girl of 11½ had mild chorea with endocarditis. The child had a serious nervous family history. Two months after the beginning of the chorea the patient had an attack of grave septicemia with endocarditis, from which she died in nine days. At the necropsy a vegetating mitral endocarditis was found.

(5) A boy of 12, without rheumatic history, died from mitral obstruction following chorea.

(6) A boy of 8 died from pericarditis, hypertrophy of the heart, and left brachiocephalic thrombosis.

**Pathology of Chorea.** Reichhardt<sup>1</sup> has had an opportunity to perform an autopsy on a number of cases of chorea and believes that he has found a characteristic pathologic lesion of this disease in the brain. These findings, with the exception of one case, were microscopic only. They consisted of a perivenous round-cell infiltration, most marked in the aqueduct of Sylvius and in the visual ganglia in one case, and in the subcortical strata of the brain in another. A bacteriologic examination was made in each case, but was found to be negative, except in one case complicated by endocarditis in which the staphylococcus was found in the blood. The chorea bodies and multiple emboli, described by other investigators as typical of chorea were not found by the writer. He is inclined strongly to the belief that chorea is due to the toxins of bacteria.

**Chronic Hydrocephalus.** William Degre<sup>2</sup> speaks of the medical and surgical treatment of this affection. The medical treatment consists of a douche of iodine solution, 28° to 30° C. over the head for four to five minutes; cloths wrung out of this solution are applied to the head for an hour, resulting in diaphoresis. Where the latter is found wanting, the whole body is subjected to these applications for twenty minutes. Surgical treatment consists of puncture

(1) Deutsche Archiv f. klinische Medizin, Vol. LXXII, Nos. 5 and 6.

(2) Wiener medicinische Wochenschrift, No. 16, 1903.

of the lateral ventricle, drainage, lumbar puncture, according to Quinke. The results are not permanent. This treatment may be followed by death, but the procedure is considered justifiable to relieve symptoms.

**Hydrocephalus.** Immerwol<sup>1</sup> has given the treatment of hydrocephalus considerable thought. He reports the treatment in a series of 10 cases, 9 of which were congenital, one following meningitis. The congenital cases were given specific treatment. The lateral ventricles were punctured in five cases; iodine was injected into the ventricles in one case and in the remaining 4 a lumbar puncture was made. The treatment proved futile in 8 cases, but one of the congenital cases made a complete recovery, and after five years is in good health still, without a sign of recurrence. The last case, that following meningitis, also made a perfect recovery. Lumbar puncture was resorted to repeatedly and sodium iodide was administered internally. The author advocates lumbar puncture in every case of hydrocephalus, especially when the disease is acquired. In the congenital cases antisyphilitic treatment should always be given and pushed as much as possible.

**Juvenile Tabes.** P. Linser<sup>2</sup> says the symptoms of tabes usually appear at the age of puberty, the course being very much protracted. Hereditary syphilis is here, as in adult cases, the principal cause. In the author's case the child's father suffered with progressive paralysis and there was a distinct history of infection. The efficacy of the antiluetic treatment is inversely proportionate to the duration of the disease.

**Tetany.** Tetany is on the decline since 1865, says Saint-Ange Roger.<sup>3</sup> Epidemics do not occur as they used to in Paris.

In Germany, Austria, Italy, the disease is frequent. In Paris Marfan meets with many atypical forms. In these any groups of muscles may be involved, voluntary as well as involuntary, or the contracture may be limited to a single muscle. As these forms may simulate a great many diseases, the author advises recourse to the signs of Trousseau, of Weiss, of Chvostek and of Erb. The first is, how-

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(1) *Archiv f. Kinderheilkunde*, Vol. XXXII, No. 56.

(2) *Münchener medicinische Wochenschrift*, April 14, 1903

(3) *Gazette des Hôpitaux*, Sept. 4, 1902.

ever, the only one pathognomonic, when present, but even it may be absent. The other two occur in other conditions than tetany. Generalized tetany may simulate tetanus or cerebro-spinal meningitis.

It is most difficult to differentiate tetany from hysteria and tetanus. Schlesinger points to heightened galvanic excitability, peculiar to tetany. Pseudo-tetanus may occur in the new-born. This may simulate eclampsia, sclerema, meningeal and subarachnoid hemorrhages. Hochsinger called attention to myotonia of nurslings, and its relation to tetany. It is characterized by painless, permanent contractures, not accompanied by neuro-muscular hyperexcitability, and occurs in non-rachitic infants of a few months. This muscular hypertonia may become pathologic under the influence of various affections. Hochsinger considers it a separate entity with transitional forms between it and pseudo-tetanus, whereas, the author considers the two identical.

**Pseudomeningitis.** R. Peters<sup>1</sup> refers to 17 cases of pseudomeningitis which came under his own observation, in children from the ninth month to the thirteenth year. Eleven of these occurred before the fifth year, 7 occurred with typhoid, 3 with influenza, 1 with croupous pneumonia, 2 gastrointestinal disorder, 2 with mixed infections of influenza and streptococcus. In 15 there was complete recovery, 1 case became an idiot and 1 died.

The author considers the differential diagnosis between pseudomeningitis and genuine meningitis, and believes the following points important: (1) If convulsions occur in pseudomeningitis they are tetanoid or tonic in character, are restricted to certain groups of muscles, and are not followed by prolonged unconsciousness. (2) With the beginning of pseudomeningitis, a reduction of temperature occurs. (3) In the further course, bulbar symptoms *as irregular pulse and respiration* are absent. (4) The amount of cerebro-spinal fluid is not increased. (5) Delirium is frequently observed. In 4 cases the author observed an acute psychosis following the pseudomeningitis. *Uremia* was absolutely excluded in the seventeen cases.

Alfred Gordon<sup>2</sup> reports a case in which severe meningeal

(1) Russ. Archiv f. Pathol., etc., Bd. XIII, No. 3.

(2) Therapeutic Gazette, Aug. 15, 1902.

symptoms occurring in the course of gastrointestinal disease were *allayed by the administration of normal salt solution*. There was marked rigidity and opisthotonos, convergent strabismus, a temperature of  $103^{\circ}$ , small and hardly perceptible pulse and almost complete suppression of urine. Ten minutes after the injection of 15 c.c. the urine increased, the rigidity of the neck and the strabismus disappeared. The injection was repeated, and the child ultimately recovered.

**Tubercular Meningitis.** At a meeting of the Philadelphia Pediatric Society Edsall<sup>1</sup> reported a case of tubercular meningitis without focal symptoms, in a boy about 10 years of age. When admitted, he was in moderately deep coma, was having tonic convulsions and had a temperature of  $104^{\circ}$ . Lumbar puncture was made and 10 c.c. of fluid removed; this was thick, no tubercle bacilli were found in the fluid, though a number of mononuclear cells were noted. There were no ocular symptoms though partial dilatation of the pupils was noted. Kernig's sign was absent; there was no retraction of the head nor rigidity of the neck. The boy had moderate hydrocephalus. A diagnosis of tuberculosis was ventured. Three days after admission the boy died, and it was discovered that he had suffered from an acute miliary tuberculosis originating in the upper lobe of the left lung. Tubercular involvement of the meninges was also discovered. The anterior half of the medulla, the pons and the adjacent parts of the crura and cerebellum were involved. The absence of rigidity of the neck and also the absence of Kernig's sign, are noteworthy.

In the discussion Griffith said that he was constantly being impressed with the irregularity of the symptoms of tubercular meningitis. In his experience great retraction of the head was absent in many cases. The neck, however, he found more or less rigid. He notes that one sees all varieties of tubercular meningitis.

(1) *Pediatrics*, Dec. 15, 1902.

## MISCELLANEOUS.

**Hospitals.** L. La Ferta<sup>1</sup> renders an interesting account of his visit to children's hospitals abroad. He points out that the medical staffs are not accountable to lay boards, and that their authority over the patient for purposes of study and treatment is absolute during life, and he emphasizes the fact that post-mortem examinations are obtained without difficulty. He notes that both London and Paris are much better prepared with hospital accommodation for children than is New York, and that this accommodation is not in the general but special hospitals. The principal ones are in East London,—Evalina and Great Ormonde Streets. It is noteworthy that in these the number of men on the house staff is proportionately greater than on similar staffs in America. This creates better opportunities for work in the laboratories. Particular mention is made of the out-patient department of the Great Ormonde Street Hospital, presided over by George F. Still. Four treatment rooms, each one in the charge of three or four physicians and a nurse, are provided. Here the histories are taken by junior physicians or students, and serious or obscure cases are referred to one of the attending physicians in charge. Not more than 20 patients are allowed to be treated in one room during a morning. Cases in any way suspicious of contagion, are at once sent to the isolation room. The child is undressed in an ante-room, and the pulse, temperature and respiration are taken. These data recorded on an appropriate card, the child is sent into the treatment room, where a thorough physical examination is made. The urine, blood cultures and sputa are examined in the laboratory near by. La Ferta saw nothing unusual in the way of treatment. The mild cases of chorea which presented themselves in abundance were treated by confining the child to bed, by forced feeding and comparatively large doses of arsenic. The very difficult problem of feeding the out-door cases is never more satisfactorily met than with us. Scalded or boiled milk with the addition of starchy gruels and cream, are prescribed. To make sure that mothers carry out instructions,

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(1) Medical News, Dec. 20, 1902.

printed directions are given as to the preparation of foods.

In Paris, there are numerous children's hospitals. A description of the Bretonneau Hospital will give a fair idea of all. Each attending physician is responsible during a portion of the year for the out-patient department. Beside this, there are various pavilions such as surgical, medical and pathologic, as well as others, for measles, whooping cough, scarlet fever and diphtheria. The pavilions are low, only two or three stories high, and surrounded by stretches of lawn and gravel walks. Visitors and physicians are furnished with gowns which they change as they enter the various pavilions. In infant feeding, the French physicians are only beginning to appreciate the advantage of clean, raw milk over the sterilized and Pasteurized article. There is great need in Paris of a milk commission to raise the standard of the milk supply. The substitute foods most in vogue are sterilized milk, either whole or diluted, lactated, farinaceous foods and butter-milk boiled with flour gruel.

**Therapeutics.** A contribution to the therapeutics of children is made by N. G. Price,<sup>1</sup> who advocates the substitution of *heroin hydrochlorid* for belladonna, hyoscyamus and stramonium whenever an antispasmodic, sedative and analgesic is indicated. He urges the following objections to the three drugs last mentioned: They are uncertain in action and cannot be depended upon. They have a tendency to produce alarmingly toxic symptoms. They cause a disagreeable parching of the mouth and fauces and a consequent polydipsia. They constipate. They disorder the digestive apparatus. Heroin possesses all the good qualities of these drugs and none of their bad ones. The author has used heroin extensively and draws the following conclusions:

1. Heroin is nonirritating, although occasionally it causes a transitory vertigo. The dose for a child 1 year old should not exceed 1-240 grain.
2. As an antispasmodic it is better than the bromids or the belladonna group.
3. It is a sedative to all the mucous membranes, especially of the respiratory and genito-urinary apparatus. It soothes irritation and lessens congestion.

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(1) Philadelphia Medical Journal, Feb. 14, 1903.

4. It diminishes hyperperistalsis and hypersecretion of the intestine.

5. Heroin is absorbed rapidly by the clean rectal mucosa. The dose per rectum should be double the dose by mouth.

6. It is oxidized completely in the system and does not produce cumulative symptoms.

7. Heroin hydrochlorid is preferable to the alkaloid itself because it is readily soluble in any vehicle and it is also more rapidly absorbed. Heroin is not adapted for use in mixtures, nor for hypodermic use because of its insolubility.

8. Heroin hydrochlorid is compatible with the expectorants and with other antispasmodics, analgesics and sedatives.

Concerning *antipyresis* in children, E. W. Saunders<sup>1</sup> says, slight causes will often produce fever in children; some bear high temperature well, while others will be very sick with a moderate temperature. Antipyresis, therefore, depends upon the concomitant symptoms. It is the universal practice to influence fevers by the use of antipyretics. Among these, hydrotherapy takes first place, but it should not exclude all others; efficient use of a variety will accomplish best results. In some cases, especially long-continued high temperature, a combination of internal and external means may be decidedly advantageous; it is a method not often enough employed. Coal tar products may be used with advantage and safety in many cases; their use is contraindicated in all diseases where the heart is liable to fail; not harmful in the early stages of scarlet fever. In influenza they should be combined with some heart stimulant. The writer has used phenacetin with good results. Pilocarpin is valuable in diphtheria and scarlet fever, as an antipyretic and eliminant—in diphtheria as an adjuvant to antitoxin it is almost indispensable. Veratrum viride is the safest antipyretic in pneumonia. It must be given under close supervision and the dose reduced or discontinued when the physiologic effects are produced.

The writer has found the external application of guaiacol very valuable in reduction of temperature in typhoid fever, in infants and children, as well as in pneumonia. With

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(1) *Courier of Medicine*, Dec. 1, 1902.

care, there is little danger of depression. In some cases, one drop rubbed on the abdomen will reduce temperature, in others, several drops are required. The application of hydrotherapy demands a knowledge of its principles and a correct appreciation of a varied technic.

**Anesthetics.** An editorial in the *Medical News*<sup>1</sup> states that most deaths from chloroform in children occur in individuals who are the subjects of lymphatic diseases. At the clinic in Gratz for the last 20 years every case of fatality with chloroform occurred in children who were of the constitutio lymphatica. James Ewing's personal experience, together with a study of necropsy reports, of children who died from chloroform showed that in America the Gratz observations repeated themselves. Lartigau's experience at Roosevelt Hospital shows that in necropsies made on children affected by the lymphatic constitution, death occurred after ether as well as after chloroform. In every case of general anesthesia in children, a careful search should be made for signs of lymphatic diathesis. The chief symptoms are: (1) the presence of universal enlargement of the lymph nodes with no inflammatory cause; (2) hypertrophy of the tonsils, and adenoids; (3) a tendency to anemia; (4) weakness of pulse and fluttering heart. Chloroform, when fatal, produces death through the heart, and the child's heart proportionate to body weight has much more force and is less susceptible to inhibitory nervous influences than in adults. Children's respiratory apparatus and kidneys, on the other hand, are more susceptible to the evil effects of ether. Unless some cardiac lesion exists, and there is a suspicion of a lymphatic constitution, chloroform is the anesthetic of choice.

**Hyperpyrexia.** A temperature of  $110^{\circ} + F.$  in an infant 10 days old was encountered by C. W. Kahl.<sup>2</sup> Mother delivered after slow and difficult labor. Patient visited twice daily for nine days, when the case was dismissed. On the evening of the eleventh day the child developed a temperature of  $110^{\circ} + F.$  per rectum. Appeared in great pain; head rolled from side to side, eyes partly open, lips parched and everted. Bowels had not moved for 24 hours. There was tympanites and slight peripheral inflammation of the

(1) March 8, 1902.

(2) *Pacific Medical Journal*, December, 1902.

umbilicus. The abdomen was rubbed with sweet oil and turpentine, and cold baths were ordered every two hours with an antiseptic wash for the umbilicus. One drachm of castor oil every four hours, with syrup of strychnin and quinin, 1 drachm every two hours. The next day the child rested better, the inflammation of the umbilicus had subsided, the temperature had fallen to 101.5° F. Laxatives were continued until there was free action from the bowels. The stools were at first hard and curded, followed by green and slimy stools for two days. Recovery complete.

**Cuban Fevers.** Some fevers of doubtful nature in infancy are described by J. L. Duenas of Havana.<sup>1</sup> Fevers during infancy and childhood are of extraordinary frequency, and the fever symptom in a tropical country where febrile diseases are so common has always been a matter of great local interest. Gastrointestinal fever in Cuba comprises two principal types, one of rapid, the other of slow evolution. Both are common to all periods of infancy and childhood, though the rapid type occurs more frequently in young children. Vomiting and constipation may exist at first, or yellowish-greenish colored mucous stools accompanied by redness and irritation of the anus. The tongue is slightly coated. In some, all of these symptoms may be absent, and the main symptom be a sensibility on pressure of the abdomen, most intense over the region of the liver. Temperature rises to 104° from the first stage, and then takes either a remittent type and assumes the slow form of evolution from which the patient usually recovers, or the acute type prevails; the high temperature continues, the cerebral symptoms become more intense, convulsions set in accompanied by coldness of the extremities and suppression of the urine. The patient may die in 24, 36 or 40 hours.

The author believes these febrile processes correspond exactly to the severe eclamptic, cerebral meningitic, or convulsive forms of acute enteritis, or entero-colitis, but in Cuba the points of discussion are: (1) the belief in the prevalence of endemic paludic germs; (2) that they may constitute siderant types of yellow fever; and (3) a frequent absence of early disturbances in the digestive apparatus. He affirms that these fevers in the majority of cases

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(1) Journal American Medical Association.

are of gastrointestinal origin because (1) there is nearly always a history of antecedent dietary transgressions; (2) the disease is more frequent during warm weather, and, while they resemble fevers of a typhic nature, the children may be attacked repeatedly; (3) bacteriologic examination demonstrates the existence of the bacillus coli and other saprophytes of Havana drinking water; (4) absence of plasmodiæ in the blood and the absence of the Widal reaction; (5) quinin is ineffectual, and because of the active properties of intestinal eliminators.

**Dermoids.** In reporting two cases of dermoids in children, Samuel W. Kelley<sup>1</sup> says the characteristics on which a clinical diagnosis of dermoids may be based are: (a) The position where the embryonal layers blend, or of the testicle or ovary; (b) the time of their appearance. The beginning of all dermoids is present at birth, and may be discovered then or later. Their growth is slow and unless inflamed they are not painful; they may or may not fluctuate, or may fluctuate in one part and be perfectly unyielding in another. Subcutaneous dermoids are not connected with the skin, nor do they involve adjacent glands unless inflamed, or the seat of carcinomata. Kelley's first case was in a boy 2½ years of age, whose mother had noted the slow growth of a tumor situated at the left testicle since his first year. It was now the size of an English walnut. When the child was brought to him there was no pain, tenderness, nor apparent heat. The scrotum was movable under the tumor. A diagnosis of dermoid cyst was made and removal advised. The tumor corresponded anatomically to the testicle, did not involve any other structure and was easily dissected out. It contained bone, fine hair and several cavities filled with sebaceous matter; perfect recovery.

The second case was a dermoid of the ovary, in a child 7 years and 10 months old, pale, delicate and undersized. Had previously two attacks of so-called "inflammation of the bowels." When the patient was examined a tumor could be made out which extended nearly to the umbilicus. It was dull on percussion and was shaped like a distended bladder. A few days later the tumor could be easily pushed upward, the child had had an attack of pain and there was

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(1) Journal American Medical Association, Feb. 14, 1903.

suppression of urine. A month later the writer was hurriedly called to see the child. He found her in great pain, the pulse was quick, and there was a partial obstruction of the bowels which could not be relieved by repeated enemata. He surmised that a loop of intestine had slipped back and was imprisoned behind the tumor; massage and manipulation of the abdomen followed by a copious enema relieved the attack and confirmed this opinion. Operation was finally consented to and the tumor was found to be a small dermoid of the left ovary, the size of an orange, containing fluid, cartilages partly ossified, and fine hairs; prompt recovery.

**Tetanus.** W. S. Cooke<sup>1</sup> records a case of tetanus following vaccination. A girl 4 years old was vaccinated on March 28. The usual precautions as to cleanliness were observed. The vaccine was of the glycerinated variety on an ivory or celluloid point encased in paraffin. A protective shield was placed over the abrasion. The case ran an ordinary course until April 26, when the child seemed to be indisposed. The sore was a typical vaccine pustule still discharging. Rigidity of the muscles of the face was noticed on the following day. The rigidity extended and became general. On the 30th convulsions developed. On May 2d 800 units of tetanus antitoxin were given. The spasm and convulsions continued until the 10th. After that there were no further convulsions and the spasm gradually remitted. The explanation of the infection is thought to lie in the fact that, shortly after the vaccination the child was sent to the country and allowed to play out-of-doors. Dust and dirt carrying the germs settled on the legs and the perspiration washed them into the sore.

[After the occurrence of a number of tetanus cases succeeding vaccination in Cleveland, and later in Camden, New Jersey, McFarland collected 95 cases in all of this hitherto infrequent complication. From a study of these he concluded that in most cases the virus was infected with tetanus bacilli. He believes that the future avoidance of the complication is to be sought for in greater care in the preparation of the vaccine virus.—Ed.]

**Congenital Syphilis.** Some time ago Glueck criticised the dictum known as the law of Profeta, and cited a case in

(1) New York Medical Journal, Jan. 10, 1903.

point, that of a three-months-old child, born of a syphilitic mother, which eight days after being weaned developed a small nodule in the vicinity of the submaxillary gland with a swelling of the latter. This nodule soon took on the appearance of a typical chancre and symptoms of secondary syphilis followed in short order. Profeta<sup>1</sup> replied to Glueck's criticisms, maintaining that the latter is not sufficiently familiar with the real facts to warrant any criticism. He does not believe that the case cited can be considered one of acquired syphilis because: (1) the position of the chancre is unusual; the infection of the nursing infant occurring usually in the mouth; (2) because the enlargement of the submaxillary gland occurred at the same time that the nodule appeared; whereas glandular enlargements in syphilis usually do not appear until sometime after the primary infection; (3) because the constitutional symptoms appeared soon after the local infection. Profeta gives it as his opinion that this was a case of congenital or hereditary syphilis. The child is born apparently healthy, the symptoms of syphilis appearing as a rule about the third month. Children born of syphilitic mothers should not be given over to a wet nurse for fear that she might contract syphilis, which in such cases usually proves fatal.

Glueck,<sup>2</sup> in responding to the above, says that Profeta evidently did not have all the facts in the case when he challenged his criticisms. He gives a complete history of his case and points out that the mother while nursing the child was suffering from a suppurating condyloma of the breast. He believes that there can be no question that the infection was neither hereditary nor congenital, but an acquired syphilis.

J. H. Stowers<sup>3</sup> reports the case of a male child, aged 10 months, with congenital syphilis, the younger of two children. He was first seen in hospital at the age of 3 months and was the subject of a secondary dermatosyphilide. The eruption, which was squamopapular in character, was said to have existed only a few days. In a week or two it entirely disappeared under treatment. The child was again

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(1) Wiener medizinische Wochenschrift, No. 51, 1902.

(2) Wiener medizinische Wochenschrift, No. 51, 1902.

(3) British Journal of Dermatology, December, 1902.

brought to Stowers on October 16th with a limited dermatitis of moderate severity about the buttocks and thighs, the result of local irritation. In addition, the child (who had for two months been getting dull and sleepy), "as if his head was heavy," was now the subject of an enlarged cranium with extensive dilatation of the superficial veins, due to hydrocephalic effusion probably of syphilitic origin. Another child in the same family was under care for congenital syphilis at the age of 4 months. About two months after marriage the mother had been the subject of a specific eruption which disappeared under treatment.

**Syphilitic Epiphysitis.** W. L. Johnson<sup>1</sup> reports this case. Patient was admitted to the Nursery with symptoms of enteritis. The ankles soon swelled up with redness and tenderness. Talipes varus was pronounced. Later the child had snuffles. Mercurial ointment was given, with benefit.

**Suicide in Children.** C. C. Mapes<sup>2</sup> states that the causes of suicide among children are: (1) Suggestion or example; (2) grief, anger and desire for revenge, because of some real or imaginary wrong; (3) jealousy, envy and humiliation.

The daily press is regarded as the primary and principal determining factor or incentive to the act, while the latter are merely contributing or predisposing causes. According to Ogle, one out of every 119 young men, who reach the age of 20 years, died ultimately by his own hand; one out of every 312 girls, who reach the age of 15, ultimately dies by her own hand, etc. Statistics show that the proportion of male to female suicides is not quite 3 to 1, and that self-destruction is common in all periods of life, excepting in the very young. The percentage of suicides in young persons of both sexes is higher than generally supposed. Many cases have been recorded between the ages of 5 and 10 years. Child suicide is more frequent on the Continent than in the British Isles.

The Medical Society of Berne, Switzerland, made the suggestion that an Act be formulated forbidding all press notices of suicides, as epidemics arise from suggestion afforded by reports of the sensational general press—a step in the right direction.

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(1) *Courier of Medicine*, May, 1903.

(2) *Medical Age*, April 25, 1903.

# ORTHOPEDIC SURGERY

BY

JOHN RIDLON



## ORTHOPEDIC SURGERY.

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### POTT'S DISEASE.

H. L. Taylor<sup>1</sup> makes a statistical report on the final results in Pott's disease as observed in the practice of his father, the late Dr. Charles Fayette Taylor, and himself. He says: The extravagant claims at first put forth, especially in France, for the treatment by forcible correction, revealed such a lack of appreciation of the clinical behavior of the disease under mechanical treatment that the time seems favorable for a report based on observations extending over a series of years.

On studying the records it was found that one hundred and fifty cases had been observed or traced for five years or more, and of these there were 49 cases with patterns and histories covering a period of from 10 to 37 years. These cases were under treatment for two years or over, but many were seen 10, 20, or more years after their discharge, their condition noted, and patterns taken. They were all, except one case, treated by the application of the Taylor apparatus worn day and night, to which the chin support was usually added if the disease was above the ninth dorsal vertebra. The patient was never allowed to stand or sit when the apparatus was removed for adjustment; active and fatiguing exercise was forbidden, and all shocks and jars, so far as possible, avoided. If the patient's condition was poor the hours of recumbency were increased and, if necessary, the recumbent posture was maintained for weeks or months. Recumbency was always in addition to brace treatment, never in place of it. It should be said that some of the cases were of long standing and had had previous treatment of various kinds. Many of the patients came from a distance and, owing to this and to other causes, their visits were infrequent. After the

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(1) Transactions American Orthopedic Association, Vol. XV, 1902.

first year or two many came only once or twice a year, and in some cases this was insufficient.

The 40 patients were first seen in the period between 1861 and 1892; about half are known to be alive, most of them in early adult or middle life; several are married and have healthy children. Numbers have gone through college, studied a profession, or gone into business, and are leading an active life. In 12 cases there were one or more abscesses, of which 2 receded spontaneously, 7 healed, 2 were still discharging when last heard from, and in one case the result is not known. Three had paraplegia, of which two were cured and one improved. The age at the first visit was in 29 cases, under 10 years, and in eleven, 10 years or over. The duration of the disease when the patient was brought for treatment was: in 19, one year or less, in 12, over one and not over five, and in eight, over five years; in one, unknown. In 34 the disease developed before the age of 6 years, and in 6, including one traumatic case, at six years or over. Excluding one case not treated, the result in 33 cases was cure of the disease and restoration of health and activity; six cases were improved. One case died of nephritis, 21 years after cure, at 36 years of age; one case died of phthisis, aged about 50 years, after wearing apparatus 16 years with practically no increase in deformity. This favorable showing as regards cure of the disease is largely due to the fact that most of the fatal cases occurred in the early years of treatment, and are therefore not included in this study.

The result as regards deformity is as follows: of thirty-nine cases treated there was, on comparing the latest patterns with the first, a decrease of deformity at the point of disease in eight, an arrest of deformity in five, and an increase in twenty-six. In six cases the deformity was severe on beginning treatment, though in nearly all there was active disease. In a few there may have been partial ankylosis of two or more vertebræ. In some cases where the deformity increased the increase was very slight or was counterbalanced by improvement in secondary curves, and the final result was excellent or good, a slight stiffness or inconspicuous alteration of the normal contour being the only vestige. In other cases the result was a moderate increase, but in a considerable number, even of those taken

early and with a slight or moderate deformity, the final result was a large rounded projection. Estimated in another way and taking into account the amount of deformity when treatment was begun, the result was good in nineteen, fair in seven, and poor in twelve.

On reviewing the cases it is seen that the most important factor in determining the progress of the deformity is the location of the disease, in other words the mechanical strains to which the diseased vertebræ are subject. The results in the cervical region are the best; cure is obtained with the least deformity and in the shortest time; many recover in two years. Second in point of curability is the lumbar region, including the eleventh and twelfth dorsal vertebræ, which resemble lumbar vertebræ in function. In these cases support is usually required for five years, and frequently much longer. Of the eighteen lumbar cases fifteen were cured and three improved. In three the deformity was arrested, in five it diminished, and in ten it increased. In ten the result was good, in three fair, and in five poor.

In the dorsal region, owing to the mechanical difficulty of giving efficient support, and also to the fact that deformity here may assume larger dimensions and is more evident and unsightly, the results are least favorable. Of eighteen cases fifteen were cured and three improved. If we except those below the ninth dorsal vertebra there was increase of deformity in all, and in about half the increase was very marked. The result as to deformity may be considered good in seven, fair in four, and poor in seven. This analysis would indicate that the location of the disease is an even more important factor in the progress of deformity than early treatment or excellence of management, and that in many cases, especially in the dorsal region, it would be wise to make more use of recumbency in addition to mechanical support.

### "BLOODLESS SURGERY."

At various times and places in this country during the latter part of the year 1902 Prof. Adolf Lorenz, of Vienna, spoke upon his methods, which he is pleased to call "Bloodless Operations for the Reduction of Deformity" (*Jour-*

*nal of the American Medical Association*, Jan. 10, 1903, being an address delivered before Northwestern University, Nov. 28, 1902) and "Some of My Principles in Orthopedic Surgery." (*Medical Record*, Dec. 27, 1902, being an address delivered before the Orthopedic Section of the New York Academy of Medicine, Dec. 19, 1902.)

Such widespread notoriety was given by the newspapers to his doing and sayings, and so little comment has been made in the medical journals by reputable members of the profession that it may be permitted us to discuss the subject somewhat fully.

The term "bloodless surgery" is not strictly correct, for the operations of Prof. Lorenz were on the whole more bloody than would have been the operations for the correction of the same deformities by American orthopedic surgeons. The Lorenz methods differ in no way from the methods of other orthopedic surgeons except in this one particular, namely, Lorenz stretches and tears all the subcutaneous tissues that he can in attempting the correction of a deformity, and finally cuts what he cannot stretch or tear; other orthopedic surgeons cut in the first place what they think they must and then stretch and tear what remains.

In club-foot cases Lorenz straightens the tarsal deformity by stretching and subcutaneous tearing by hand over Koenig's wedge block, and then cuts the Achilles tendon subcutaneously. If this does not fully correct the deformity, the deformity is incurable. Other orthopedic surgeons correct many club-feet by gradual intermittent stretching, without any cutting at all in many instances. In more difficult cases they cut the Achilles tendon subcutaneously and tear the posterior ligament of the ankle joint subcutaneously. In some instances this results in tearing the skin at the back of the ankle; and some surgeons prefer to elongate this shortened skin by an acute-angled incision to tearing it. They then attack the body of the foot and straighten that by hand over the edge of the table or over Koenig's block as Lorenz does, if this is possible, and if it is not possible, they straighten it in a Grattan osteoclast, but they straighten the foot in every instance—there are no incurable cases. Occasionally the skin tears along the line of Phelps' incision and at other

times parallel to the inner border of the sole of the foot; and some surgeons prefer to elongate this shortened skin by incision instead of tearing it. The one thing of advantage in the Lorenz method is the application of thick cotton lining to the plaster splint, which diminishes the chances of pressure sores, and the application of a plaster splint half an inch thick upon which the patient can walk, without change of splint, for three or four months.

His method of reduction of congenital dislocation of the hips was derived from Paci, but has been modified and developed until it is in the writer's opinion by far the best operation in such cases. But it is not new in this country—American surgeons have been doing the operation since Lorenz reported his first series of cases in 1896, and there is no evidence to show that Lorenz has obtained a greater percentage of perfect anatomic replacements than has been obtained by others. That he does the operation more dexterously than those who have operated less frequently goes without saying.

His treatment of torticollis differs in no way from the method in general use by orthopedic surgeons for the past half century. It consists in stretching such tissues as can be stretched and in cutting subcutaneously such as cannot be stretched. True, some clean surgeons prefer an open section to a subcutaneous one in the neck region.

In his correction of paralytic deformities of the feet there is nothing new; such as can be corrected by hand he corrects by hand, and such as he cannot correct by hand he cuts. Sometimes he makes a subcutaneous tenotomy and sometimes he does a tendon grafting or transplantation.

In paralytic contractures at the knee he prefers to correct by the use of his osteoclast to division of the hamstring tendons and correction by hand; but his method sometimes results in subluxation of the tibia, and sometimes in fracture of the tibia and death from fat embolus. In the opinion of the writer his method has no advantages and carries greater risks than the usual methods. The two points of interest in Lorenz' treatment of these cases are that he hyperextends the knee (a doubtful advantage) to avoid the subsequent necessity for a brace, and that he puts on a heavy plaster splint upon which the patient may

ring. Then with the head in place the thigh was carried into extreme lateral abduction and in this position the hamstring muscles were stretched by straightening the knee many times.

The child was then clothed in smoothly fitting stockinet from the ankle to the ribs, raised above the table on a pelvic rest with a low stool under the head and shoulders, and the fixation dressing applied. The leg was flexed on the knee, and the thigh on the body to a right angle and abducted to the transverse plane of the body. From below the knee to above the waist the patient was wrapped in many layers of sheet wadding to the thickness of an inch, and this bound smoothly down by an ordinary unbleached muslin bandage; over this the plaster of Paris was applied. Plaster bandages four and five inches wide were used, being carried around the flexed knee of the replaced limb and the pelvis of the opposite side in a way to tend to press the femoral head more deeply into the acetabulum. Then these were bound down by bandages carried around the limb. These bandages were repeated again and again until the plaster splint was an inch or more in thickness. When the plaster had set, the splint was trimmed off just above the knee, above the thigh of the right side, and around the genitals and anal region, and from the top it was trimmed down so that the bridge of plaster passing around the side of the pelvis on the left side was scarcely more than three inches in width. The cut edges of the plaster splint were then rounded and smoothed, the padding was cut away, and the stockinet was drawn over the outer surface of the splint and sewed. This splint will remain on for six months.

E. H. Ochsner<sup>1</sup> reports the post-mortem findings in one of his cases and gives the following credit to Lorenz: (1) Lorenz was the first to accomplish reduction and reposition in one sitting under deep narcosis by careful and intelligent manipulation instead of employing long-continued extension or the action of an unintelligent machine. (2) He was the first to make use of the muscles extending from the pelvis to the femur, and the weight of the body in retaining the head in the acetabulum, and developing an acetabulum in the normal location, which later would be-

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(1) *Medicine*, August, 1902.

come practically perfect functionally and anatomically.

Ochsner quotes from various orthopedic clinics to show that congenital dislocation of the hip occurs in from one-half per cent to one per cent of all orthopedic cases, but offers no personal opinion as to the causation. He accepts none of the theories that have been advanced, and advances none himself. As to pathology, he says: All observers seem to agree that when present the acetabulum is always in the right place, and however rudimentary the acetabulum may be, it is always present. If the patient is old and his dislocation of long standing, the acetabulum is always more or less completely filled with cartilaginous, fibrous, or fatty substance. The head is usually of normal or nearly normal size, and consequently it is always disproportionately large. The neck is usually short and thick, and often placed at an abnormal angle to the shaft. Sometimes the angle is greater and sometimes less than normal. The ligamentum teres may be absent, or it may be drawn out into a long, thin band. At times it is even hypertrophied. It is more often absent in double than in single dislocations. The capsule is necessarily greatly elongated and often has an hour-glass constriction at its middle. This constriction may be almost imperceptible, or it may be so pronounced as to nearly completely divide the capsule into two distinct halves. The capsule may be adherent to all or a part of the circumference of the rim of the acetabulum. In double dislocations the pelvis hangs on the femora by the drawn-out capsule instead of resting upon and being directly supported by the heads of the femora. The pelvo-femoral and pelvo-crural muscles are shortened, while the pelvo-trochanteric muscles may be lengthened in extreme cases.

Ochsner's method of reduction differs a little from the method employed by Lorenz in his work in this country in that he generally uses a block and pulley tackle for traction in place of manual traction. He then goes on to say that in 212 carefully observed cases treated before January 1, 1899, Lorenz reports 108 anatomically and functionally perfect results, 102 anatomically imperfect but functionally good results. Julius Wolf, up to January 1, 1899, had treated 103 patients with 145 dislocations.

Of these he reduced 115 joints in 96 patients successfully by the Lorenz method.

In 450 attempted reductions Lorenz had one gangrene of thigh, one death from chloroform, two from combined shock and chloroform, eleven fractures of neck of femur. This looks like a rather discouraging array, but we must not forget that all these accidents occurred in patients beyond the age limits as usually given and during the developmental period of this method of treatment. It must impress us with the necessity of great caution when the patient is older, and the duty we owe these patients in urging the reductions before the age limit is reached.

Within the proper age limit only the following minor accidents occurred: One fracture of the horizontal part of os pubis, one fracture of crista ilii, three peroneus paralysis. All of these subsided spontaneously.

Finally, Ochsner reports the findings in a case that died November 27, 1901, some three years after the operation.

"The pelvis is well formed and apparently of normal size. The individual bones of which it is composed are held together firmly by strong ligaments. The capsular ligaments are well developed and hold the heads firmly in the acetabula. No abnormal sliding motion is possible. The heads of the femora are opposite the Y cartilage. A straight line drawn through the two Y cartilages passes apparently directly through the center of the heads and about half a centimeter below the upper borders of the great trochanters. The upper borders of the heads are well below the anterior inferior spines of the ilia. The lower borders of the heads project fully half a centimeter below the level of the iliopectineal eminences. So far this description tallies almost perfectly with that of a normal pelvis which I obtained from a female patient about eight years of age. In the latter the Y cartilages seem to be relatively a little nearer to the anterior inferior spines.

"In order to determine the condition of the reduced joint itself I opened the right one by a semilunar incision, severing the capsular ligament for about the lower half of its extent. The neck is strong, of about normal length; the angle between it and the shaft may be a trifle less than that of the ordinary femora. The head is a little larger than normal, not perfectly globular, but on its anterior

inferior and mesial surface it has the appearance as though a shell of a small sphere had been superimposed. The whole articular surface is covered by a smooth layer of cartilage. The capsular ligament is strong and hugs the head and neck closely. The acetabulum is well developed, almost if not quite as deep as normal; it has a well formed solid rim. The cotyloid ligament is present and apparently normal. The articular surface is smooth. There is no definite ligamentum teres.

"At the bottom of the acetabulum I found a thin, paper-like structure about 4 millimeters wide and 1.5 centimeters long, one end attached at the place where the ligamentum teres is normally inserted in the acetabulum, and the other end free. Whether this may be looked on as the remnant of the ligamentum teres I am unable to say.

"I believe that the reduced joints will bear the most careful comparison and the most rigid scrutiny, and will convince even the most skeptical that we have obtained an almost perfect anatomical result: joints which would always have remained stable, which would have supported the weight of the body under all ordinary circumstances, and which would permanently have insured a perfect functional result."

E. H. Bradford<sup>1</sup> holds that *so-called transposition and functional success* without anatomic reduction should be classed as a surgical failure as far as reduction goes, even if the patient be benefited by the treatment received.

The causes of relapse after reduction are enumerated as follows:

1. The folding of the capsule in the acetabulum before the reduced head.
2. Insufficient stretching of the soft parts, especially the lower and inner portion of the capsule.
3. Relaxed condition of the capsule and muscles, including faulty attachment of the psoas.
4. Twist in the neck of the femur.

Where these conditions are borne in mind by the surgeon and corrected, as they can be, it may be expected that relapse after reduction of the congenitally dislocated head of the femur will be rare.

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(1) Transactions American Orthopedic Association, Vol. XV, 1902.

## HIP DISEASE.

R. W. Lovett<sup>1</sup> reports on all the new cases presenting for treatment at the Children's Hospital in Boston in the years 1897 and 1898, and they were investigated during 1901 and 1902.

The cases fell at once into two groups: (1) Those where a destructive, progressive, and perhaps painful affection was present which lasted at least many months and which presented those symptoms which we associate with hip disease, that is, shortening, atrophy, joint stiffness and thickening about the joint. Unless there was evidence to place it elsewhere each case of this sort was classed as tuberculous disease in order not to violate the usual tradition too widely, and (2) a group of cases at once became evident where the disease either recovered almost at once, or pursued a course differing widely from that which we associate with tuberculous osteitis. Such cases have been classified as well as possible, but many remain questionable.

A provisional classification of the results found is as follows:

- A. Old disease rejected, seven.
- B. Insufficient data for diagnosis, eight.
- C. Recovery after transitory affection, twenty-one.
- D. Some serious affection not obviously tuberculous, fourteen.
- E. Tuberculous hip disease, forty-five.

The diagnosis of the cases in class C was as follows:

Hip disease .....	7
Hip disease (?) .....	7
Synovitis .....	3
Synovitis (?) .....	2
Functional hip .....	1
Hysterical hip .....	1
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Total .....	21

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(1) Boston Medical and Surgical Journal, August 14, 1902.

The conclusion from a consideration of these 21 cases is that the presence of atrophy of marked grade, night cries, pain in the knee, severe muscular spasm, loss of the gluteal fold, apparent shortening and fixation in deformity are not inconsistent with the presence of an affection which will speedily recover.

The original diagnosis of the 14 cases in class D was: Hip disease, 11; hip disease (?), 3. Ultimately it was found that 2 were infantile paralysis; 2, acute osteomyelitis; 1, coxa vara; 2, incomplete recovery, with normal X-ray; 2, arthritis deformans (?); 5, questionable, even after a period of about four years.

In considering the 45 cases of tuberculous hip disease, class E, Lovett has concluded that it is obvious that the signs ordinarily taken to be diagnostic of tuberculous hip disease are not characteristic of it, but are also present in cases which rapidly recover, and in other forms of chronic joint inflammation than the tuberculous. It is therefore obvious that some diagnostic criterion must be sought more accurate than the presence of one or all of the signs—muscular spasm, atrophy, night cries, gluteal wasting, and sensitiveness of the joint. In other words, a new diagnostic standard better than that advocated in the books must be formulated. It seems probable that this work will lie in the closer study of the signs given above, and their grouping along with a development of the facts to be learned by careful palpation of the parts about the joint. Of all the signs given “thickening of the trochanter” proved to be the most reliable. The X-ray is of great value in early diagnosis.

J. K. Young<sup>1</sup> divides the subject of hip joint operations into operative measures for the deformity, and operative measures for the disease.

Under the operative measures for the relief of deformity are included: (1) Multiple myotomy and tenotomy; (2) forcible straightening, and (3) osteotomy.

1. *Multiple Myotomy*.—When the ankylosis is of the false variety, this method of treatment is frequently all that is required, particularly when the second method of forcible straightening is employed as an adjunct.

2. *Forcible straightening* by itself is not efficient for

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(1) *American Medicine*, October 25, 1902.

the relief of deformity in hip-joint diseases, and great injury may result if tenotomies have not been performed previously.

3. *Osteotomy* gives very satisfactory results in true or osseous ankylosis, and the necessity for it can frequently be determined by the skiagraph. Of the methods which are employed the Adams operation, through the neck of the femur, is seldom required, on account of the loss of the head and neck. The Barton or intertrochanteric operation does not give as satisfactory results as the Gant or subtrochanteric osteotomy. In performing the Gant operation it has been found more satisfactory to use the chisel after the method of Maunder. In most instances it will be found satisfactory to make a lateral incision, particularly in children, but in adults it is sometimes better to make an anterolateral incision. In adults an oblique section of the bone is sometimes more satisfactory than a transverse section. In some instances the deformity is so great and the acetabulum has traveled so high that the case is inoperable, no known operation giving satisfactory results.

After osteotomy for the correction of deformity motion cannot be expected, as the limb is ankylosed in the corrected position.

Plummer and Ridlon, of Chicago, have operated on one case, dividing the long adductors and flexors subcutaneously and separating the femur from the os innominatum by driving an osteotome obliquely downwards into the fused mass of bone where the head and neck had formerly been, immobilized thereafter in a plaster spica for six weeks, obtaining in the end about 10° of motion with the limb in the desired position.

Under operative measures for the disease Young includes, (1) aspiration; (2) incision; (3) erosion; (4) excision; (5) amputation. Aspiration is condemned. Incision should be followed by washing out with bichlorid solution. Erosion is favored in cases where the disease is not extensive, particularly during childhood. Excision, when the disease is extensive, particularly in adults, and when albumin is present. Amputation should be resorted to only in rare instances, and when the disease is wholly or mainly in the femur and extends far downwards.

W. E. Blodgett<sup>1</sup> reports eleven cases of morbus coxæ senilis from the Carney Hospital. Of these, six were men. Family history of two cases points to osteo-arthritis of the spine in parents; family history of a third case points to a general deforming joint disease (rheumatoid arthritis?); family history of a fourth case, to chronic knee trouble in a sister; of a fifth, to hip disease (?) in a brother; in all, there is family history of joint disease in five of the eleven cases. Age at onset of disease varies from twenty-six up; two under thirty; two, thirty to forty; three, forty to fifty; three, fifty to sixty; one, unknown. In six of the cases there is history of trauma, which was apparently a factor in determining the onset of the disease, as follows: Working treadle in making shoe strings, excessive walking, fall (two cases), laborious life of digging, and a period of being rattled about on a dump cart. In each of these cases, the relation of the trauma and the onset of the process at the hip is so intimate as to suggest its being causal. In five cases no etiology was discovered. History of trauma is not more common in the younger than in the older of the eleven cases. Pain is referred, in order of frequency, to the thigh (back or front), knee, hip, groin and lower leg; pain worse usually during use of hip; in two cases, worse at night; frequently affected by changes in the weather.

In four cases, both hips are more or less involved. Joints involved other than the hip are as follows: Knee (two cases), shoulder (one case), other joints normal (six cases), no record (one case).

There is permanent flexion of from 10 degrees to 45 degrees in all but one of the cases examined; the one case without permanent flexion was flexed at the beginning of treatment. In all the cases, motion in all directions was more or less limited, especially in rotation, abduction and adduction. Flexion, the motion most commonly used, is most frequently spared. In two cases the hips are practically ankylosed. Atrophy of the thigh is proportionately much greater than of the calf in all the cases recorded, except one in which there is one-half inch atrophy of calf and none of thigh. There is shortening in all the unilateral cases but one; maximum, one inch; average, five-

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(1) Boston Medical and Surgical Journal, January 29, 1903.

walk for four or more months and escape the subsequent use of a brace, at least for a time.

In correcting ankylosed angular deformities at the hip resulting from hip disease, he drives an osteotome down between the greater trochanter and the acetabulum and then breaks in a line near the point of normal joint motion, or at any rate nearer than in the Gant or other operations. It undoubtedly makes correction more theoretically correct, but it probably adds to the risk of a new tuberculous inflammation.

In bow-legs and knock-knees he prefers osteoclasis to osteotomy so long as the bones are elastic; and osteotomy for adults and adolescents. Many orthopedic surgeons prefer the bloodless osteoclasis in all instances.

In hip disease his aim is to procure a solid ankylosis of the hip joint with the leg in a good position. All American orthopedic surgeons aim to cure the joint without ankylosis and with the leg in good position, and usually accomplish this, not infrequently ultimately obtaining a normal range of motion, a result which every one has seen, but which Prof. Lorenz will not admit as a possibility.

### CONGENITAL DISLOCATION OF THE HIP.

Royal Whitman<sup>1</sup> believes that anterior transposition, which constitutes a very considerable majority of the "good results" obtained by the Lorenz bloodless method, are *not permanent in the new position*, as claimed by Lorenz, but that they will gradually pass to the position of the unoperated congenital anterior and supracotyloid dislocations; and that the result in these cases will not be as good as by the bloody method of (Hoffa) replacement. His conclusions are:

(1) That the more complete fixation that may be obtained by carrying the plaster bandage below the knee after reduction, combined in certain instances with lessened outward rotation of the limb, is an improvement on the ordinary technic of the Lorenz operation in the treatment of young children; (2) that a longer period of fixation in

<sup>(1)</sup> Medical News, November 8, 1902.

an attitude approximating the normal is necessary to assure the remolding of the acetabulum in old subjects; (3) that arthrotomy and osteotomy must be regarded as necessary supplements to conservative treatment; (4) that the original Hoffa-Lorenz operation offers a prospect of a better ultimate result than transposition and that it must therefore be held in reserve as a final resort after failure of the less radical treatment.

The Editor,<sup>1</sup> who witnessed most of Lorenz' work in Chicago, gives the following description:

When the patient had been fully anesthetized, Dr. Lorenz seized the right thigh near the knee, flexed the thigh strongly on the abdomen, and pressed firmly downward, stretching the soft parts at the back and below the joint. He then, with the leg flexed to a right angle, strongly abducted it, sawing against the upper part of the abductor muscles of the thigh with the ulnar border of the hand until the fossæ which appear above and below the upper insertion of the abductor muscles when they are put on the stretch had disappeared and the thigh could be abducted to the plane of the table upon which the patient lay. During the stretching process the pelvis was firmly held by the assistants. A sheet was then passed between the child's legs and its ends were fastened to the head of the table to make a fixed point against which to pull. Both assistants now seized the limb and pulled downward with a heave-ho motion while Professor Lorenz pushed downward against the greater trochanter. When the head had been pulled down to, or below, the acetabulum, the thigh was again flexed, a wedge-shaped block placed beneath the greater trochanteric region for a fulcrum to pry over, and the thigh again strongly abducted, even beyond the transverse plane of the body. In this way all the soft parts binding the femur to the pelvis were stretched and torn subcutaneously until the head could be freely moved about in all directions. Then Professor Lorenz seized the thigh just above the knee and, abducting, flexing, rotating and adducting, lifted the femoral head into the acetabulum. The click of replacement could be readily heard and the jump seen and felt as the head passed over the cotyloid

(1) John Riddion, A Description of the Operation by Lorenz on Lolita Armour on October 12, 1902. N. Y. Medical Journal, October 15, 1902.

ring. Then with the head in place the thigh was carried into extreme lateral abduction and in this position the hamstring muscles were stretched by straightening the knee many times.

The child was then clothed in smoothly fitting stockinet from the ankle to the ribs, raised above the table on a pelvic rest with a low stool under the head and shoulders, and the fixation dressing applied. The leg was flexed on the knee, and the thigh on the body to a right angle and abducted to the transverse plane of the body. From below the knee to above the waist the patient was wrapped in many layers of sheet wadding to the thickness of an inch, and this bound smoothly down by an ordinary unbleached muslin bandage; over this the plaster of Paris was applied. Plaster bandages four and five inches wide were used, being carried around the flexed knee of the replaced limb and the pelvis of the opposite side in a way to tend to press the femoral head more deeply into the acetabulum. Then these were bound down by bandages carried around the limb. These bandages were repeated again and again until the plaster splint was an inch or more in thickness. When the plaster had set, the splint was trimmed off just above the knee, above the thigh of the right side, and around the genitals and anal region, and from the top it was trimmed down so that the bridge of plaster passing around the side of the pelvis on the left side was scarcely more than three inches in width. The cut edges of the plaster splint were then rounded and smoothed, the padding was cut away, and the stockinet was drawn over the outer surface of the splint and sewed. This splint will remain on for six months.

E. H. Ochsner<sup>1</sup> reports the post-mortem findings in one of his cases and gives the following credit to Lorenz: (1) Lorenz was the first to accomplish reduction and reposition in one sitting under deep narcosis by careful and intelligent manipulation instead of employing long-continued extension or the action of an unintelligent machine. (2) He was the first to make use of the muscles extending from the pelvis to the femur, and the weight of the body in retaining the head in the acetabulum, and developing an acetabulum in the normal location, which later would be-

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(1) *Medicine*, August, 1902.

come practically perfect functionally and anatomically.

Ochsner quotes from various orthopedic clinics to show that congenital dislocation of the hip occurs in from one-half per cent to one per cent of all orthopedic cases, but offers no personal opinion as to the causation. He accepts none of the theories that have been advanced, and advances none himself. As to pathology, he says: All observers seem to agree that when present the acetabulum is always in the right place, and however rudimentary the acetabulum may be, it is always present. If the patient is old and his dislocation of long standing, the acetabulum is always more or less completely filled with cartilaginous, fibrous, or fatty substance. The head is usually of normal or nearly normal size, and consequently it is always disproportionately large. The neck is usually short and thick, and often placed at an abnormal angle to the shaft. Sometimes the angle is greater and sometimes less than normal. The ligamentum teres may be absent, or it may be drawn out into a long, thin band. At times it is even hypertrophied. It is more often absent in double than in single dislocations. The capsule is necessarily greatly elongated and often has an hour-glass constriction at its middle. This constriction may be almost imperceptible, or it may be so pronounced as to nearly completely divide the capsule into two distinct halves. The capsule may be adherent to all or a part of the circumference of the rim of the acetabulum. In double dislocations the pelvis hangs on the femora by the drawn-out capsule instead of resting upon and being directly supported by the heads of the femora. The pelvo-femoral and pelvo-crural muscles are shortened, while the pelvo-trochanteric muscles may be lengthened in extreme cases.

Ochsner's method of reduction differs a little from the method employed by Lorenz in his work in this country in that he generally uses a block and pulley tackle for traction in place of manual traction. He then goes on to say that in 212 carefully observed cases treated before January 1, 1899, Lorenz reports 108 anatomically and functionally perfect results, 102 anatomically imperfect but functionally good results. Julius Wolf, up to January 1, 1899, had treated 103 patients with 145 dislocations.

Of these he reduced 115 joints in 96 patients successfully by the Lorenz method.

In 450 attempted reductions Lorenz had one gangrene of thigh, one death from chloroform, two from combined shock and chloroform, eleven fractures of neck of femur. This looks like a rather discouraging array, but we must not forget that all these accidents occurred in patients beyond the age limits as usually given and during the developmental period of this method of treatment. It must impress us with the necessity of great caution when the patient is older, and the duty we owe these patients in urging the reductions before the age limit is reached.

Within the proper age limit only the following minor accidents occurred: One fracture of the horizontal part of os pubis, one fracture of crista ilii, three peroneus paralysis. All of these subsided spontaneously.

Finally, Ochsner reports the findings in a case that died November 27, 1901, some three years after the operation.

"The pelvis is well formed and apparently of normal size. The individual bones of which it is composed are held together firmly by strong ligaments. The capsular ligaments are well developed and hold the heads firmly in the acetabula. No abnormal sliding motion is possible. The heads of the femora are opposite the Y cartilage. A straight line drawn through the two Y cartilages passes apparently directly through the center of the heads and about half a centimeter below the upper borders of the great trochanters. The upper borders of the heads are well below the anterior inferior spines of the ilia. The lower borders of the heads project fully half a centimeter below the level of the iliopectineal eminences. So far this description tallies almost perfectly with that of a normal pelvis which I obtained from a female patient about eight years of age. In the latter the Y cartilages seem to be relatively a little nearer to the anterior inferior spines.

"In order to determine the condition of the reduced joint itself I opened the right one by a semilunar incision, severing the capsular ligament for about the lower half of its extent. The neck is strong, of about normal length; the angle between it and the shaft may be a trifle less than that of the ordinary femora. The head is a little larger than normal, not perfectly globular, but on its anterior

inferior and mesial surface it has the appearance as though a shell of a small sphere had been superimposed. The whole articular surface is covered by a smooth layer of cartilage. The capsular ligament is strong and hugs the head and neck closely. The acetabulum is well developed, almost if not quite as deep as normal; it has a well formed solid rim. The cotyloid ligament is present and apparently normal. The articular surface is smooth. There is no definite ligamentum teres.

"At the bottom of the acetabulum I found a thin, paper-like structure about 4 millimeters wide and 1.5 centimeters long, one end attached at the place where the ligamentum teres is normally inserted in the acetabulum, and the other end free. Whether this may be looked on as the remnant of the ligamentum teres I am unable to say.

"I believe that the reduced joints will bear the most careful comparison and the most rigid scrutiny, and will convince even the most skeptical that we have obtained an almost perfect anatomical result: joints which would always have remained stable, which would have supported the weight of the body under all ordinary circumstances, and which would permanently have insured a perfect functional result."

E. H. Bradford<sup>1</sup> holds that *so-called transposition and functional success* without anatomic reduction should be classed as a surgical failure as far as reduction goes, even if the patient be benefited by the treatment received.

The causes of relapse after reduction are enumerated as follows:

1. The folding of the capsule in the acetabulum before the reduced head.
2. Insufficient stretching of the soft parts, especially the lower and inner portion of the capsule.
3. Relaxed condition of the capsule and muscles, including faulty attachment of the psoas.
4. Twist in the neck of the femur.

Where these conditions are borne in mind by the surgeon and corrected, as they can be, it may be expected that relapse after reduction of the congenitally dislocated head of the femur will be rare.

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(1) Transactions American Orthopedic Association, Vol. XV, 1902.

## HIP DISEASE.

R. W. Lovett<sup>1</sup> reports on all the new cases presenting for treatment at the Children's Hospital in Boston in the years 1897 and 1898, and they were investigated during 1901 and 1902.

The cases fell at once into two groups: (1) Those where a destructive, progressive, and perhaps painful affection was present which lasted at least many months and which presented those symptoms which we associate with hip disease, that is, shortening, atrophy, joint stiffness and thickening about the joint. Unless there was evidence to place it elsewhere each case of this sort was classed as tuberculous disease in order not to violate the usual tradition too widely, and (2) a group of cases at once became evident where the disease either recovered almost at once, or pursued a course differing widely from that which we associate with tuberculous osteitis. Such cases have been classified as well as possible, but many remain questionable.

A provisional classification of the results found is as follows:

- A. Old disease rejected, seven.
- B. Insufficient data for diagnosis, eight.
- C. Recovery after transitory affection, twenty-one.
- D. Some serious affection not obviously tuberculous, fourteen.
- E. Tuberculous hip disease, forty-five.

The diagnosis of the cases in class C was as follows:

Hip disease .....	7
Hip disease (?) .....	7
Synovitis .....	3
Synovitis (?) .....	2
Functional hip .....	1
Hysterical hip .....	1
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Total .....	21

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(1) Boston Medical and Surgical Journal, August 14, 1902.

The conclusion from a consideration of these 21 cases is that the presence of atrophy of marked grade, night cries, pain in the knee, severe muscular spasm, loss of the gluteal fold, apparent shortening and fixation in deformity are not inconsistent with the presence of an affection which will speedily recover.

The original diagnosis of the 14 cases in class D was: Hip disease, 11; hip disease (?), 3. Ultimately it was found that 2 were infantile paralysis; 2, acute osteomyelitis; 1, coxa vara; 2, incomplete recovery, with normal X-ray; 2, arthritis deformans (?); 5, questionable, even after a period of about four years.

In considering the 45 cases of tuberculous hip disease, class E, Lovett has concluded that it is obvious that the signs ordinarily taken to be diagnostic of tuberculous hip disease are not characteristic of it, but are also present in cases which rapidly recover, and in other forms of chronic joint inflammation than the tuberculous. It is therefore obvious that some diagnostic criterion must be sought more accurate than the presence of one or all of the signs—muscular spasm, atrophy, night cries, gluteal wasting, and sensitiveness of the joint. In other words, a new diagnostic standard better than that advocated in the books must be formulated. It seems probable that this work will lie in the closer study of the signs given above, and their grouping along with a development of the facts to be learned by careful palpation of the parts about the joint. Of all the signs given “thickening of the trochanter” proved to be the most reliable. The X-ray is of great value in early diagnosis.

J. K. Young<sup>1</sup> divides the subject of hip joint operations into operative measures for the deformity, and operative measures for the disease.

Under the operative measures for the relief of deformity are included: (1) Multiple myotomy and tenotomy; (2) forcible straightening, and (3) osteotomy.

1. *Multiple Myotomy*.—When the ankylosis is of the false variety, this method of treatment is frequently all that is required, particularly when the second method of forcible straightening is employed as an adjunct.

2. *Forcible straightening* by itself is not efficient for

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(1) *American Medicine*, October 25, 1902.

the relief of deformity in hip-joint diseases, and great injury may result if tenotomies have not been performed previously.

3. *Osteotomy* gives very satisfactory results in true or osseous ankylosis, and the necessity for it can frequently be determined by the skiagraph. Of the methods which are employed the Adams operation, through the neck of the femur, is seldom required, on account of the loss of the head and neck. The Barton or intertrochanteric operation does not give as satisfactory results as the Gant or subtrochanteric osteotomy. In performing the Gant operation it has been found more satisfactory to use the chisel after the method of Maunder. In most instances it will be found satisfactory to make a lateral incision, particularly in children, but in adults it is sometimes better to make an anterolateral incision. In adults an oblique section of the bone is sometimes more satisfactory than a transverse section. In some instances the deformity is so great and the acetabulum has traveled so high that the case is inoperable, no known operation giving satisfactory results.

After osteotomy for the correction of deformity motion cannot be expected, as the limb is ankylosed in the corrected position.

Plummer and Ridlon, of Chicago, have operated on one case, dividing the long adductors and flexors subcutaneously and separating the femur from the os innominatum by driving an osteotome obliquely downwards into the fused mass of bone where the head and neck had formerly been, immobilized thereafter in a plaster spica for six weeks, obtaining in the end about 10° of motion with the limb in the desired position.

Under operative measures for the disease Young includes, (1) aspiration; (2) incision; (3) erosion; (4) excision; (5) amputation. Aspiration is condemned. Incision should be followed by washing out with bichlorid solution. Erosion is favored in cases where the disease is not extensive, particularly during childhood. Excision, when the disease is extensive, particularly in adults, and when albumin is present. Amputation should be resorted to only in rare instances, and when the disease is wholly or mainly in the femur and extends far downwards.

W. E. Blodgett<sup>1</sup> reports eleven cases of morbus coxae senilis from the Carney Hospital. Of these, six were men. Family history of two cases points to osteo-arthritis of the spine in parents; family history of a third case points to a general deforming joint disease (rheumatoid arthritis?); family history of a fourth case, to chronic knee trouble in a sister; of a fifth, to hip disease (?) in a brother; in all, there is family history of joint disease in five of the eleven cases. Age at onset of disease varies from twenty-six up; two under thirty; two, thirty to forty; three, forty to fifty; three, fifty to sixty; one, unknown. In six of the cases there is history of trauma, which was apparently a factor in determining the onset of the disease, as follows: Working treadle in making shoe strings, excessive walking, fall (two cases), laborious life of digging, and a period of being rattled about on a dump cart. In each of these cases, the relation of the trauma and the onset of the process at the hip is so intimate as to suggest its being causal. In five cases no etiology was discovered. History of trauma is not more common in the younger than in the older of the eleven cases. Pain is referred, in order of frequency, to the thigh (back or front), knee, hip, groin and lower leg; pain worse usually during use of hip; in two cases, worse at night; frequently affected by changes in the weather.

In four cases, both hips are more or less involved. Joints involved other than the hip are as follows: Knee (two cases), shoulder (one case), other joints normal (six cases), no record (one case).

There is permanent flexion of from 10 degrees to 45 degrees in all but one of the cases examined; the one case without permanent flexion was flexed at the beginning of treatment. In all the cases, motion in all directions was more or less limited, especially in rotation, abduction and adduction. Flexion, the motion most commonly used, is most frequently spared. In two cases the hips are practically ankylosed. Atrophy of the thigh is proportionately much greater than of the calf in all the cases recorded, except one in which there is one-half inch atrophy of calf and none of thigh. There is shortening in all the unilateral cases but one; maximum, one inch; average, five-

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(1) Boston Medical and Surgical Journal, January 29, 1903.

eighths inch. In several cases mild muscular spasm is present, probably due to recent strain; in one case spasm and sensitiveness were very marked, and there were all signs of acute coxitis. Five of the eleven cases have been studied by skiagraphs; these all show bony thickening about the head and neck of the femur; in one case the bony deposit is as large as an orange.

Treatment of these cases has been general and local.

The general treatment has been, forced feeding, mild catharsis and the copious ingestion of water; elixir of the triple phosphates has been the medication commonly used, if any. This has been prescribed because of its value as a tonic.

Local treatment has been protection, immobilization, and, in picked cases of ankylosis or very deficient mobility, excision.

By *combined treatment* R. T. Taylor<sup>1</sup> means the usual mechanical treatment in conjunction with erasion of the local tuberculous focus. His procedure is as follows:

Preparation for the operation. The majority of patients are admitted with the position of flexion or malposition, and are put to bed with the traction in the line of deformity. This is maintained until the parallelism of the legs is restored and the acute symptoms have subsided. It is then possible to obtain a good skiagraph, which was, of course, not the case when the leg was flexed.

The operation. In beginning cases, when the focus is very small indeed, well within the bone, and not encroaching on the joint surfaces, we can at least leave these to conservative methods of rest, fixation, and traction in the hope that nature, assisted by good hygiene and tonics, will arrest the disease and furnish a strong fibrous wall to resist further inroads of the process, as we all know it is possible to obtain a cure in early cases. Such cases should have X-ray examinations made from time to time to be sure that there is no extension close to the bone periphery or actual bone invasion; if extension is found then operation must be done without delay. If the case has extensive sinuses which are secondarily infected, the patient's condition is bad, and the skiagraph shows extensive joint destruction, nothing can be gained by erasion (nor by

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(1) Transactions American Orthopedic Association, Vol. XV, 1902.

incision, as Barker pointed out), and our best plan is to lay the sinuses wide open and overcome the secondary infection as soon as possible, leaving the original trouble to conservative methods. Experience has taught us the practical impossibility of helping these cases by extensive operation from the prolonged suppuration that usually follows with hectic fever and amyloid changes.

"Thus it will be seen that I urge from my experience the operation of erosion on what we might call cases of moderate bone involvement or the middle class of cases."

Taylor enters the joint by the anterior route. Then with the X-ray negative in the window of the operating room, as a guide, he cuts away all tuberculous tissue. The joint is then flushed with hot normal salt solution or sterile water, and, in the case of much bleeding, hot, one to one thousand bichlorid for its astringent effect, to occlude the absorptive vessels, as well as its antiseptic value.

The joint is then dried with sterile gauze, and in the earlier cases he used Phelps' suggestion of "pure carbolic acid," and filled the joint with it for one or two minutes to kill any remaining bacilli, and followed it with alcohol. This method of disinfection he has abandoned, however, as he had a child practically die instantly on the table before his eyes from carbolic acid poisoning, notwithstanding the immediate free local use of alcohol and other methods of general stimulation; it was possibly from some large absorptive vessel taking it up as soon as put in the cavity. The symptoms were not those of fat embolism and were synchronous with the application of the carbolic acid.

He now uses for disinfection a two and five-tenths per cent solution of formalin, obtained from the commercial 40 per cent stock solution. This strong antiseptic has, as is well known, caustic, deeply penetrating powers, and is left in the joint for five minutes, when the latter is again thoroughly dried. A small wick of iodoform gauze is placed in the wound, reaching to the bottom of the cavity. No sutures are taken in the capsule, but the fascia lata is sewed up tight by a continuous subcutaneous suture of silver wire. These sutures pass around the wick of iodoform, which is perhaps unnecessary, except to allow the escape of serum and hemorrhage, which are never abundant. The wound is then covered with silver foil and ample gauze

dressing. The child is put on a Bradford frame, and five or more pounds traction is used. On the seventh day the iodoform wick is withdrawn, and on the tenth day the silver sutures are withdrawn, and the wound is found dry and healed *per primam*.

This recumbency and traction should be maintained for eight or more weeks, to allow ample time for repair, and then the patient is allowed to get up with a long traction splint, high shoe, and crutches, just as though we were treating an early case of coxalgia. At the end of six months or a year or more, if all symptoms have subsided, the brace, crutches, and high shoe may be cautiously discarded.

### COXA VARA.

Jones<sup>1</sup> reports an extreme case of coxa vara in a woman 26 years old. In walk the condition resembled double congenital dislocation of the hip, and also spastic paralysis. There was two inches shortening on the right side and two and a half inches on the left side. The flexion angle on each side was about sixty degrees, and neither limb could be flexed beyond a right angle. Abduction was very slight; the knees could be separated only five inches. The skiagraph showed the femoral neck joined to the shaft at an acute angle; the left femoral head was distant from the shaft only about a quarter of an inch and the right femoral head practically touched the shaft.

### FRACTURE OF THE NECK OF THE FEMUR.

Whitman<sup>2</sup> points out that in fracture of the neck of the femur in children repair is almost invariably rapid and complete; the fracture is usually of the green-stick variety; the shortening is rarely more than three-quarters of an inch; and the disability is mainly due to the shortening and restricted abduction. He recommends correcting the deformity as one would any other green-stick fracture, and goes on to say: It is apparent that one cannot apply direct

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(1) Transactions American Orthopedic Association, Vol. XV, 1902.

(2) Transactions American Orthopedic Association, Vol. XV, 1902.



Fig. 12. Side view of patient with Coxa Vara.—Jones' Case.



Fig. 13. Posterior view of same patient,—Jones' Case.



Fig. 14. X-ray print showing extreme Coxa Vara.—Jones' Case.

force for this purpose in this situation, but the desired result may be accomplished in another manner. The range of normal abduction of the thigh is dependent upon the upward projection of the neck of the femur, which normally forms an angle with the shaft of from 125 to 140 degrees. The extreme limit of passive abduction is reached when the neck and trochanter come in direct contact with the rim of the acetabulum. If the angle between the neck and the shaft of the femur is lessened, the range of abduction is correspondingly restricted. As this limitation of abduction is a constant symptom of depression of the neck of the femur, restoration of the normal range would imply correction of deformity if the capsular ligament were normally resistant. Forcible abduction of the thigh is indicated, therefore, as a means of replacing the depressed neck of the femur. In this maneuver one uses the rim of the acetabulum as a fulcrum, the shaft as a lever, and depends upon the lower border of the capsular ligament to fix the head of the femur. When the normal limit of abduction as compared with that of the other limb is reached, one may infer that the deformity has been reduced; for the weakened neck should give way before the capsule becomes sufficiently stretched to allow a subluxation of the head. If, then, the limb be fixed in this attitude of extreme abduction, repair should take place in an approximately normal position, even if the fracture were made complete by the manipulation.

He then reports two cases adjusted in this way and retained in a plaster-of-Paris spica for four months, in which perfect results were obtained.

### WOLFF'S LAW.

A. H. Freiberg<sup>1</sup> gives a *critical consideration of Wolff's theory*, and the work of other investigators along the same line. He gives a careful description of a specimen of old unreduced dislocation of the hip, from the museum of the Cincinnati Hospital, and reaches the following conclusions: (1) The strictly mathematical concept of Wolff's law has not yet been justified by demonstration. (2) Save in

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(1) American Journal Medical Sciences, December, 1902.

mathematical aspects, the statements of Wolff's law and its corollaries may be accepted as being in agreement with the observations hitherto made. (3) If we accept the foregoing statements it does not follow that we must make use of the so-called "functional methods" in our therapeutic endeavors; they are to be chosen not from theoretical considerations only, but for reasons of expediency and practicability.

R. Tunstall Taylor, in discussing Freiberg's paper, said: "I consider that all of us must concur fully with Wolff that pressure does not produce atrophy in bone, as Lorenz has claimed, under pathologically increased or transposed burdening; and also we must admit that functional transformation of bone must and does occur to meet the altered static demands of pressure, tension and shearing strain."

### JOINT TUBERCULOSIS.

C. F. Painter<sup>1</sup> directs attention to the malignancy of joint tuberculosis, believing that a so-called healed tuberculous bone lesion is a constant menace to its possessor. This conclusion has been reached from a consideration of the following facts: (a) In our metropolitan communities large numbers of children have been treated during the past thirty years in children's hospitals. (b) We are coming to recognize errors in the diagnosis of the character of some joint lesions formerly regarded as tuberculous, which remove from this category a considerable number of the best results, already doubtless classified among the cured cases. These patients, coming from a station in life that naturally patronize public dispensaries, do not present themselves in the proportion they should among the patrons of clinics for other diseases. They are not much in evidence in the street, in the schools, or other public places. They can not conceal their deformities as a rule, and a fair inference is that they must either become incapacitated for association with their fellows or else succumb to some other or their old disease.

He then reports a series of cases; thirty-eight of the recurrences were at the seat of the old disease alone, five

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(1) Transactions American Orthopedic Association, Vol. XV, 1902.

were both local and elsewhere, whereas only four were purely metastatic. These four metastases were pulmonary, in the genitourinary tract and elsewhere in the osseous system.

He sums up with the following conclusions:

1. Tuberculous disease of joints tends to recur after apparent cure in a considerable proportion of cases.

2. This recurrence is commonly a local one. Metastases are not common.

3. Trauma, direct or indirect, is frequently associated with recurrence. Indirect trauma is probably the exciting cause of the recurrences, especially where partial ankylosis or deformity exists.

4. Patients who have suffered from bone and joint tuberculosis should be cautioned that they are not well when symptoms have ceased, and that reasonable care must be exercised to avoid recrudescences.

5. Deformity and shortening should be corrected as far and as accurately as possible to lessen the chance of recrudescence.

6. Mechanical treatment, especially fixation, should be used in the acute conditions in childhood. Exploratory interference where discretion is used, with a view to removal of isolated foci, is advisable in many cases in children, and is to be urged in the majority of recrudescences, if seen early. Recognition of the fact that patients with hip disease, Pott's disease, and tumor albus have tuberculosis just as much as if they had phthisis, and should be treated accordingly, must be insisted upon.

## CONGENITAL CLUB-FOOT.

Alex. Ogston<sup>1</sup> advances an entirely *new principle in the treatment of these cases*. Recognizing the fact that the center of ossification in the tarsal bones of the young is much smaller than the bone itself—is in fact only a bony kernel—Ogston recommends that the bone be laid bare, the cartilaginous surface of the bone cut through and the bony kernel scooped out. The astragalus is always operated upon, and in severe cases the cuboid and the os calcis

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(1) British Medical Journal, June 21, 1902.

also. Afterwards the foot can be readily shaped by hand to the desired position and retained thus.

J. P. Mann<sup>1</sup> says: "*Subcutaneous division of the involved soft tissues*, aided by stretching and tearing, has been adequate to the correction of the most resistant foot. Open operations will correct deformities, but subcutaneous division will produce the same result with less risk of sepsis, less mutilation of the foot, less pain to the patient, without any exposed cicatrices, and with greatly decreased postoperative contraction; thus insuring a stronger, more shapely and more useful foot than can be obtained by open operation."

A. F. Jonas<sup>2</sup> presents a *modification of the open operation*, as follows: An incision is made, beginning slightly below the margin of the plantar fascia on the inner side of the foot, at a point on a line directly below and anterior to the internal malleolus, extending forward and upward to a point on the first metatarsal bone and nearly to the metatarso-phalangeal joint. A second incision is made, beginning at a point over the astragalo-scapoid articulation, extending forward and slightly downward, joining the first incision near the metatarso-phalangeal joint, forming a V. The incisions are deep so as to include all the subcutaneous structures, including the fat. This flap is dissected backward to the points where the incision began, producing a large triangular wound, making it possible to divide all the necessary structures under the guidance of the eye. All the soft structures are thus exposed. The inner fasciculus of the plantar fascia is divided diagonally. The diagonal division of the plantar fascia is done, so that after correction there may be left no defect between the divided ends, but that the points of the incised fascia may still lie in contact, thereby lessening the tendency to contraction. The remaining structures are then divided as directed by Phelps, until the astragalo-scapoid capsule is reached. Instead of dividing this, another incision is made on the outer side of the foot over the head of the astragalus, extirpating first the bursa which is usually present, then the tendons and soft structures are pushed to one side and the neck of the bone is

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(1) *Medicine*, September, 1902.

(2) *Journal American Medical Association*, September 13, 1902.

exposed. The neck of the bone is then cut with a chisel. The foot can then be pushed outward without separating the astragalo-scapoid articulation, which nearly always occurs in the Phelps operation. Occasionally, in old and inveterate cases, it becomes necessary to make a cuneiform excision of the neck, and in several instances the neck and head of the astragalus have been removed. The varus having been over-corrected and turned into a valgus, the equinus deformity is relieved by a subcutaneous division of the tendo Achillis. All hemorrhage is easily controlled with catgut ligatures and pressure. The triangular flap is then turned back, covering the wound except at its anterior point. No sutures are employed. A perforated silk protective covers the wound. The outer wound over the astragalus is closed with catgut. An antiseptic dressing is applied and over this a retentive dressing of plaster of Paris, beginning at the toes, extending upward above the knee, including one-third of the length of the thigh. The dressing is not disturbed under five weeks. The wounds are then completely healed.

It appears to the critic that the keynote of Jonas's success is found in the last paragraph of his conclusions: "The best possible guarantee against relapse is to divide soft parts and bone, so that the foot falls into its natural position with little or no pressure."

### PARALYTIC CLUB-FOOT.

R. A. Hibbs<sup>1</sup> reports on seventeen patients, eighteen cases, which have been studied with the distinct object in view of determining whether or not the increased length of the tendo Achillis consequent upon its subcutaneous division for the relief of equinus has any effect in modifying the function of the calf muscles. In all cases the deformity was caused by infantile paralysis; and in all sufficient time had elapsed to justify the consideration of the results as final, the shortest time being three years. The operation in each instance was that of subcutaneous division of the tendo Achillis, with, in some instances, of the plantar fascia also and over correction of the deformity.

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(1) N. Y. Medical Journal, July 19, 1902.

In eleven cases no force was felt in the calf after the foot reached  $80^{\circ}$  in extension. In four cases the force of the muscle could be felt to  $90^{\circ}$ , but not beyond that point. In three the force of the muscle could be felt beyond  $90^{\circ}$ ; in one to  $95^{\circ}$  and in two to  $110^{\circ}$ . The tendons appeared to be exaggerated in length and the muscles retracted in proportion to their weakness and did not show the usual prominence at the back of the ankle. It appears that by lengthening the tendo Achillis it must be expected that there will be still further shortening of the calf and modification of its function; which fact accounts to some extent for the results seen. It does not fully account for them, however, because in the eleven cases in which the function of the calf was practically lost there was no such impairment of its function or lengthening of the tendon immediately after the operation as now exists, which is evidence that after the patient began to walk the tendon gradually elongated, allowing still further shortening of the muscle and modification of its function.

Hibbs concludes by saying that it would appear that the modification of the function of the calf in these patients was the result of, first, the shortening of the muscle in the production of the deformity; second, the further shortening of the muscle as a result of the lengthening of the tendo Achillis by tenotomy in the correction of the deformity; and, third, the still further shortening of the muscle as a result of the lengthening of the tendon caused by the elongation of the structure forming the bond of union between the divided ends. With what frequency such serious modification of the function of the calf will be seen as a result of the division of the tendo Achillis and the correction of equinus in this class of cases can not be determined from the study of so small a number. That it does occur, however, and probably with greater frequency than is generally supposed, is clearly evident. The natural conclusion from Hibbs' investigations is that the best functional result in paralytic equinus can only be had by restoring the muscle shortened in the development of the deformity to its full length by stretching, not by further shortening it through operative procedure. This is in full accord with the teaching and practice of Newton M. Shaffer, for more than twenty years chief surgeon to the

New York Orthopedic Hospital and Dispensary, and Hibbs' predecessor in that institution. With all the histories of patients in that institution at his command it seems a pity that Hibbs did not take up the other side of the problem and study the results obtained from the treatment of these cases by mechanical stretching.

### TENDON GRAFTING.

J. H. Waterman<sup>1</sup> gives a very careful and complete review of the history of the operation of tendon grafting, too extensive for consideration here, and points out the essential features to be considered by the operator. The deformity, if a rigid one, should be first corrected, without tenotomy if possible, with tenotomy if one must; the complete function of healthy muscles must not be risked for the restoration of completely paralyzed muscles; each case presents a new problem and must be studied and operated on its own merits; the limb must be retained in a plaster splint for at least three months after the operation, and may need support by a brace for still a longer time; after-treatment by massage and exercises must be under the control of the operator.

At a meeting of the New York Academy of Medicine for a consideration of operations for the relief of paralytic deformities,<sup>2</sup> Whitman said that with regard to tendon transplantation, as each muscle has an essential function, its loss can never be entirely replaced; therefore, even practical cure by this means is possible only when the paralysis is very limited in extent.

The operation is essentially palliative rather than curative, but as a means of lessening the tendency toward deformity and of improving function it is often of great service.

The actual results of the procedure have been obscured by premature and exaggerated reports of successful cases, but a careful study of the relation between the function of the normal part and the degree of disability will indicate what can actually be accomplished.

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(1) Medical News, July 12, 1902.

(2) American Practitioner and News, June, 1902.

The original operation of Nicoladoni, of transplanting the two peronei tendons into the tendo Achillis, is of value in lessening the tendency toward deformity, but it is absurd to propose to replace the function of the great calf muscle by two feeble muscles working at a disadvantage. The same criticism may be made of the attempt to make one muscle perform two different acts at the same time, as when a portion of the calf muscle is attached to the tibialis anticus with the aim of aiding dorsal flexion. Nor is it reasonable to suppose that a weak muscle can carry out its own function and at the same time that of a more powerful neighbor, as in the original operation of Parrish, in which the extensor proprius pollicis is attached to the tendon of the paralyzed tibialis anticus.

Of the various modifications of the technic of tendon transplantation, that advocated by Lange of relieving a muscle completely of its former function and attaching its tendon directly to the periosteum at the point of greatest usefulness is perhaps the most important.

V. P. Gibney<sup>1</sup> reports on thirty-six cases; in 33 per cent the results were good; in 53 per cent fair; and in 14 per cent negative. "By good results in these cases, we mean that the tendons operated upon have acted as was intended, that they have not broken loose from their attachments, and that the foot is maintained in normal position. Many of these patients at the end of a year are able to dispense with apparatus, but a few at the end of two years and a half are wearing what is known as a flat-foot spring under advice, because we believe that the rough usage of a foot in a growing child would be too much for these transplanted tendons. By the term fair is meant that the result is not so good as was expected, but it is at least a help in the management of the case. The apparatus required to maintain the good position is not so elaborate, can be lighter, and while the tendons act feebly we feel they are still capable of greater improvement. The term negative is used where the condition is *in statu quo ante*. In no single instance has it been observed that the foot or limb is in a worse condition than before the operation. So that the term negative is used rather than the word failure."

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(1) N. Y. Medical Journal, May 10, 1902.

## WEAK FEET.

A. W. Elting<sup>1</sup> recommends the following exercises:

1. With the foot pointing directly forward in the standing posture the patient raises and lowers the heels.

2. The patient stands with the points of the toes in apposition, and the heels turned outward so that the feet enclose a right angle. In this position the heels are raised and lowered while they are turned outward as far as possible.

3. The patient assumes the same attitude as in 2 and raises the heels, then bends the knees, then straightens the knees and then lowers the heels.

4. The patient sits with erect back and extended legs, and with the toes turned as far inward as possible, describes circles with the feet.

5. In the same sitting posture the patient adducts and supinates the feet as forcibly as possible.

6. The patient should be instructed to stand and walk with the inner edge of the foot elevated as far as possible and when it is necessary to stand for a long time the position of the feet should be frequently changed.

## INFANTILE PARALYSIS.

Painter<sup>2</sup> reports an epidemic of thirty-eight cases. These cases occurred in Gloucester, Mass., in the summer of 1900. They were first noted, in point of time, from the latter part of June to the first part of September. In point of space they were within a radius of four miles, at the very extreme limit, and most of them were in a comparatively narrow compass. The series is one of the largest on record, and goes to show the possible infectious and epidemic character of the disease. There were twenty-three males and nine females; the youngest was 13 months, the oldest 10 years of age; twenty-one were 3 years or younger; eight were 2 years or younger; seven were 4 years or older. No case observed got entirely well, and only one died,

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(1) Albany Medical Annals, April, 1903.

(2) Transactions American Orthopedic Association, Vol. XV, 1902.

though this one was not included among the thirty-eight reported.

### SPASTIC PARALYSIS.

Jones<sup>1</sup> says: "It must be left to the surgeon to decide upon the degree of intelligence a patient is possessed of, and whether the degree possessed renders it worth his while to proceed with treatment. I would argue that a large proportion of children suffering from severe spastic paralysis may be transformed into useful members of the community, improved both in body and mind by surgical methods, enabled to walk with comparatively little deformity, many requiring only the aid to be derived from one or two sticks.

"The class of cases which we can place outside remedial art is the idiot, the microcephalic, and that violent irritable type of diplegiac, so often seen, subject to fits and active athetotic movements, who has generally lost all control over his secretions.

"The treatment in any condition short of this may be undertaken with varying success, subject to conditions which obtain in any surgical case requiring prolonged attention. For instance, active treatment may be needed for nearly two years. It would, therefore, be unwise to admit a case into a hospital for two months and then send it to a miserable home where neglect would be the inevitable sequence. Such a case, however, after hospital treatment, secure in the care of anxious, intelligent parents, no matter how poor, would prove a credit to all concerned. These are important matters which the surgeon must consider before he undertakes his work. Another class which gives the greatest anxiety and trouble is that where the affection of the hands is of such a kind as to promise but slight hope of their assistance to the limbs during walking. Before despairing, however, I think it is well to give such hands the opportunity of a careful trial, both as a mental discipline and because success sometimes exceeds expectation.

"The treatment of the hand and arm in infantile hemiplegia is distinctly less promising than in the diplegic

(1) Transactions American Orthopedic Association, Vol. XV, 1892.

case; but there are clinical signs to which I would draw your attention which help us to prognosticate success or failure. If the paralysis is complete, or, in other words, if the little patient is never known to relax his spasm, treatment is futile. If he only moves the fingers of his affected hand in conjunction with the fingers of the opposite side, the results will, in all probability, be discouraging. In all cases where the parents are able to say in the spirit of true observers that the patient is able to do more with the hand now than a little while ago the success of treatment is assured. Similarly, where any degree of voluntary relaxation of spasm exists, apart from an associated movement on the opposite side, treatment is emphatically indicated."

Noting that the dominant deformity in both hand and elbow is pronation and carpal flexion, treatment should consist in fixing the elbow supine and in hyperextending the wrist. The hyperextension of the wrist should be combined with that of the fingers, and a special arrangement adapted to keep the thumb at right angles to the palm. The spasm in these cases is often so pronounced that the extension of the wrist and fingers must be brought about very gradually. If the elbow is accompanied by a contracture of the biceps and brachialis anticus, supination may be combined with extension; if this be not the case, the flexed position of the elbow will suffice. If instead of being firmly pronated, the elbow lies semipronated it is not necessary to treat it, and all one's energies should be directed to the hand.

In selected cases Jones advises operative measures. Operation will consist of tenotomy or tendon transplantation; myotomy need only be mentioned to be avoided. An incision is made over the tendon of the flexor carpi ulnaris just above the annular ligament; another is made over the flexor carpi radialis, and both tendons are divided low down and taken, (a) the flexor ulnaris to be inserted into the extensor ulnaris, and (b) the radial flexor into the radial extensor.

Tenotomy alone has proved distinctly disappointing, although one has had an occasional successful case. The operation should be confined to the division of the flexor carpi radialis and ulnaris.

The nature of the movements to be practiced must be left to the ingenuity of the surgeon. The principles which should govern him may, however, be here indicated:

a. The movements should be practiced slowly and without excitement.

b. They should be made interesting to the child.

c. Those opposed to the direction of deformity should predominate.

d. Those presenting the greatest difficulty should be chiefly practiced.

As to paraplegia no opportunity should be lost of performing tenotomy. Even in mild cases where a spastic tendon is to be felt let us ruthlessly divide it. If the surgeon has decided that a case of spastic paraplegia is suitable for treatment a splint should be prepared so designed as to keep the limbs in pronounced abduction, the area over the hamstrings, the adductors at the groin, and the tendo Achillis should be suitably prepared for operation. The adductors should be first attacked. An incision an inch and a half long should be made to the inside of the adductor longus. This muscle should be seized by a Spencer Wells or small Doyen forceps and about three-quarters of an inch of it removed. The limb is then abducted and portions of the adductor brevis and gracilis are excised in similar fashion. The horizontal portion of the adductor magnus and, if necessary, the pectineus, is divided, and also any tissue, muscular or fibrous, obstructive to an absolutely free abduction of the femur. Experience has shown that although the chief offenders are the adductors longus and brevis, nevertheless the deeper muscles often require division. To any one who has practiced the operation the futility of attempts to effectively divide the muscles subcutaneously will be apparent. Division is followed by but little hemorrhage, and the wounds are closed without drainage. Having excised the pieces of the adductors, each tendo Achillis is divided subcutaneously and rectangular splints are applied to the foot. The limbs are then well abducted and the surgeon notes whether there is any obstacle to easy extension of the knees. If there should be (it is not often the case), an open incision must be made on each side of the popliteal space, and the tense hamstrings are in turn divided. If these incisions

are long enough the fascial contraction can be attacked on either side, for it is here that opposition is often found. The use of a transverse incision is to be discouraged, as, when adopted, it often seriously hampers the surgeon's efforts to fully extend the knee by reason of the strain cast upon the sutures.

At the end of three months the splint is taken off during the day and movements are sedulously practiced. For some weeks stiffness exists, and often the movements are at first painful; but after a time, always shortened by vigorous exercise, the pain disappears and the effort must be made to walk.

### ELEVATED SCAPULA.

Steele<sup>1</sup> reports two cases of elevated scapula—Sprengel's disease—and comments on the fact that Jonathan Hutchinson, of London, has reported one as a unique case. The deformity appears to be congenital, and increases with the growth of the child. It consists in an elevation of the scapula, a rotation of that bone so that the lower angle points towards the other scapula and approaches the spine nearer than normal, sometimes overlapping it; the bone as a whole is smaller, and the clavicle is shorter than on the opposite side. There is also often found in the older cases some considerable degree of scoliosis. The discussion of the paper brought out the fact that the deformity is not so rare; that over forty cases have been reported, and that three or four cases are seen each year in most large orthopedic clinics. As to treatment, operative measures have proved futile, and little benefit has been derived from prolonged massage and manipulation.

### ROUND SHOULDERS.

R. W. Lovett,<sup>2</sup> in a lengthy paper, describes a *new apparatus for measuring variations in attitude*, and discusses the work of v. Meyer, Lange and Staffel, along the same

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(1) Transactions American Orthopedic Association, Vol XV, 1902.

(2) Boston Medical and Surgical Journal, November 6, 1902.



Figs. 15 and 16. Tracing and photograph before treatment.—Lovett's Article.



*Figs. 17 and 18.* Tracing and photograph of same case after treatment  
—Lovett's Article.

lines. He concludes that the spinal curvatures in round shoulders are not an evidence of local defect alone but of the general defective condition, and that treatment should be more in the line of a "setting up drill" than specially for the spinal deviation; and he found as a result of prolonged treatment that the general attitude was often greatly improved without any change in the spinal curvature itself.

### AN OPERATION FOR FLAIL ELBOW.

Jones<sup>1</sup> says: "It is not very uncommon in poliomyelitis to meet with a flail shoulder and elbow and a hand possessed of voluntary movement. In some instances the muscles of the shoulder girdle are wholly, in others only partially, paralyzed, while the biceps and brachialis anticus are functionless. The hand in such a case is of little use so long as the arm lies limp, in full extension, and the surgeon has therefore to devise an appropriate apparatus to keep the elbow flexed, or an operation which will render mechanical aid uncalled for.

"I have now treated seven such cases by a simple procedure whereby one can fix the elbow at any angle that is desired. The angle usually deemed most serviceable is that of about 40°, as the hand in this position can usually reach the neck and mouth. The operation consists in dissecting away the skin covering the front of the elbow and attaching the forearm to the upper arm. The quantity of the skin to be removed will vary, but it should be ample to allow the elbow to be firmly fixed at the required angle. I have found the removal of a diamond-shaped piece of skin to be thoroughly effective and more convenient than any other form of exsection.

"The technic merely consists in taking surgical precautions and in removing the same quantity of skin from above the elbow as from below. As the diagram shows, the diamond-shaped wound is divided into two triangles by the flexure of the elbow. While the arm is extended sutures are passed from the apex of the upper triangle to the apex of the lower, and so from the sides of one triangle to the sides of the other. The several sutures are grasped by forceps,

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(1) Transactions American Orthopedic Association, Vol XV, 1902.



Fig. 19. Showing area of skin exsected.—Jones' Article.

and the elbow is flexed when each suture is tied and cut. The operation will only last a few minutes. In three of my seven cases, operated upon over twelve months ago, some degree of voluntary flexion has returned. This is

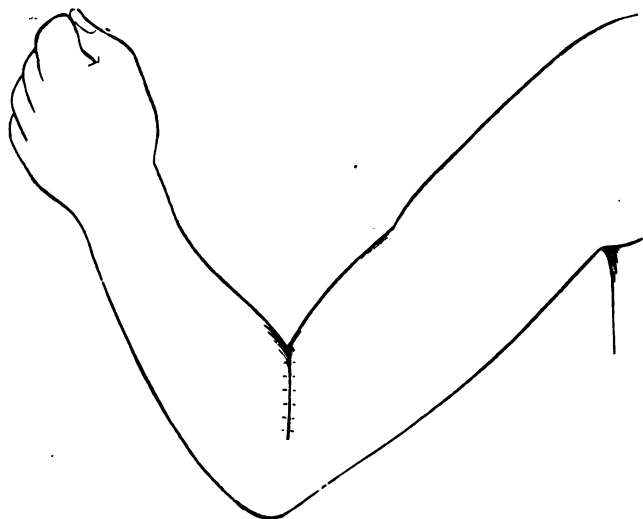


Fig. 20. Showing position of arm after suturing.—Jones' Article.

due to strength having been acquired by over-stretched muscles placed in favorable physiological and mechanical position."

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